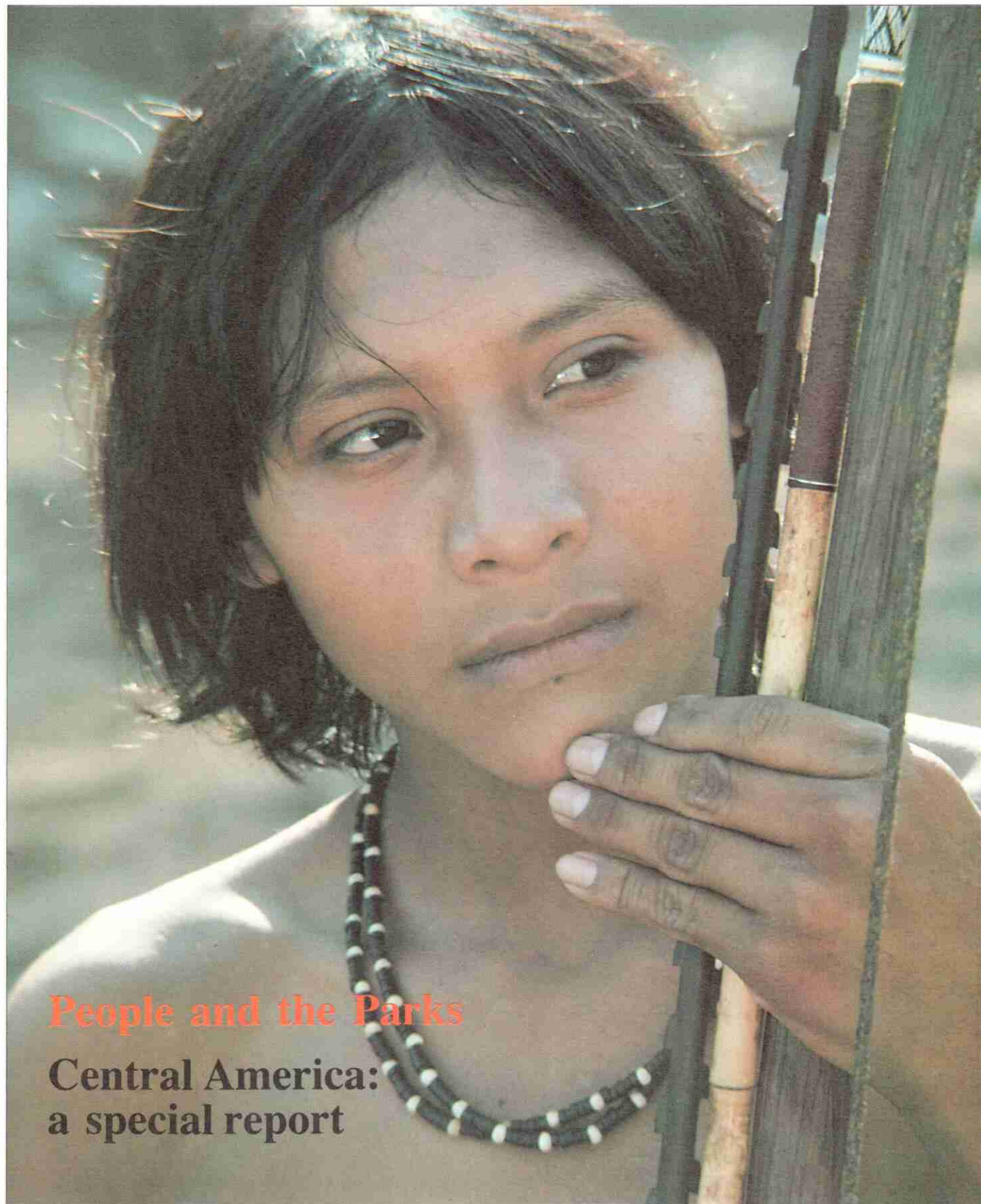


People & the Planet

IPPF, UNFPA, IUCN

Vol. 1 No. 3 1992



People and the Parks

**Central America:
a special report**

Partners for change

People & the Planet is an experiment in inter-agency development journalism. Like its predecessor publication from IPPF, *Earthwatch*, it is a joint magazine of the United Nations Population Fund, the World Conservation Union and the International Planned Parenthood Federation. But unlike *Earthwatch* it has taken the process further by linking with other international organizations which have an interest in various aspects of population, environment and development.



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Cover: Young Paitinim hunter, Amazon. Indigenous peoples are under pressure, as well as the lands they live in. Picture by Jesco von Puttkamer/Hutchison Library.

■ *The next issue of People & The Planet will look at the world 'After UNCED' and report on the good news from some of the world's most threatened population/environment 'hotspots'.*

Contents

Editorial

- 3 Beyond the summit

Newsfile

- 4 Rio, Catholic Church, Street Children, Development

Parks for Life

John Rowley

- 6 Putting people in the picture
10 Coping with demographic change
12 A living from wildlife

Elizabeth Kempf

- 16 The Law of the Mother

Central America

Alejandro Imbach

- 18 500 years after Columbus

James Ypsilantis

- 19 Fragile isthmus under pressure
20 Inside the forest
23 Diversifying crops: the Nicaraguan experiment

Cecilia Valdés

- 24 Planning for the next generation
26 Costa Rica's past progress under threat

Interview: Héctor Ceballos-Lascuráin

- 28 Tourists for conservation

Gadfly: Norman Myers

- 31 A population policy for the North?

Books

- 32 Paul Harrison on *Beyond the Limits*

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People & the Planet

Beyond the summit

This issue of *People & the Planet* follows two great global gatherings. The first, in Caracas, looked at that five per cent of the earth's land area which is deemed to be 'protected', but is in fact threatened by a multitude of human pressures. The second, in Rio de Janeiro, drew some 30,000 participants and press to the first Earth Summit and Global Forum in an attempt to grasp the whole complex issue of environment and development.

Strangely enough, the 'people question' was more straightforwardly dealt with in Caracas than in Rio. The Declaration by over 1,500 'leaders and participants deeply committed to world conservation' had no hesitation in spelling out that our "natural wealth is being eroded at an unprecedented rate, because of the rapid growth in human numbers, the uneven and often excessive consumption of natural resources, mistaken and socially harmful styles of development, global pollution and defective economic regimes, so that the future of humanity is now threatened".

In Rio, the painstaking preparatory process gave the Vatican and others an opportunity to remove the dreaded word 'population' from parts of the final texts, to downplay wasteful consumption, and to weaken the long-established definition of family planning by referring instead to the 'responsible planning of family size'.

Nevertheless, if governments and development agencies do consult the 600 pages of the Agenda 21 plan for the 21st century, they will find that it embodies a challenging perspective which should inform all future thinking about people and the planet.

This was most clearly put in her address to the conference by Gro Harlem Brundtland, Prime Minister of Norway and Chairman of the Report which carries her name. "Poverty, environment and population" she said, "can no longer be dealt with – or even thought of – as separate issues; they are interlinked in practice and cannot be delinked in the formulation of policies." Population in this analysis is one of the driving forces of environmental change and a major component of any sound development strategy, but not something separate.

There is a sense of urgency too, as a result of the improved understanding of the momentum of population growth. The issues of migration and desertification for example are now more clearly seen as economic, social and population issues which affect the whole world. Most importantly, the emphasis throughout on 'human development' as opposed to economic development has helped to link population to the central issue of poverty and to women's health, including reproductive health and to the empowerment of women and communities.

In this respect, at least, there is more than enough good sense in the words from Rio to show the path ahead. The world must start down it.

John Rowley

NEWS FILE

Judgement on Rio



Johan Holmberg of the International Institute of Environment and Development (IIED) writes:

It is easy to summarize the immediate results of the Earth Summit in Rio, but difficult to judge its long-term achievements.

It is easy to agree with the Secretary-General of the conference, Mr Maurice Strong, who said at the closing session that he was disappointed with the political commitment shown by some of the 178 nations attending. In fact, the conference result, as manifested by the documents agreed upon by its participants, falls well short of stated intentions. It represents the lowest common denominator of national interests, the inevitable effect of the UN insistence on consensus.

The two treaties that were signed – on climate change and on biodiversity – are vague, lacking timetables and targets. They were significantly weakened by the United States which ended up not signing the biodiversity treaty. The statement on forest principles, originally intended as a third treaty, does not go far beyond saying that forests are important and should be managed sustainably.

The conference action programme, Agenda 21, contains many useful ideas but must be further elaborated and disaggregated to the country level to have much practical meaning. It remains largely unfinanced, since the rich countries could only be prevailed on to meet a small fraction of its cost, arguably the biggest disappointment for the poor countries. The Rio

Declaration, a set of principles to guide nations toward sustainable development, was heavily compromised during negotiations. A sustainable development commission of some 50 countries was established under UN auspices to monitor progress toward implementation of Agenda 21, its functions to be specified by the UN General Assembly in the autumn.



Children gather around the Tree of Life at the Global Forum.

But it would be wrong, indeed arrogant, to judge this huge conference only in the light of its short term achievements. It has been a momentous exercise in awareness-raising at the highest political level. No leading politician can any longer claim ignorance about environment and development linkages. The conference has therefore provided an important basis for future action. It should not be judged by its immediate outcome but by the processes it sets in motion. It may be years before these are apparent.

Johan Holmberg is Editor of Policies for a Small Planet, just published by Earthscan, London, £14.95.

The missing money

One cannot come away from the Earth Summit in Rio without realizing that it set an almost unimaginable task before its participants, writes John Rowley.

It put a mirror to the world, showed up all its shortcomings, and expected a transformation.

Faced with a set of global problems costing at \$600 billion a year to solve (80 per cent of which was meant to come from the developing countries themselves), those without the money could only shrug while those with the money were not willing, at a time of economic uncertainty, to make large promises.

The richer countries are, at present, giving \$55 billion a year in development aid. If they reach the UN target of 0.7 per cent of their national income (which some were still not willing to commit to by the year 2000) then this would amount to \$125 billion, or just what is required in international assistance.

Unfortunately the donors offered only some \$3 billion with a promise that they would reach the 0.7 per cent target "as soon as possible". Not much of a promise, since many have been sliding back from that goal for years. In the meantime, the billions flow from South to North in debt and unbalanced trade.

This left many of the 7,000 non-government organizations, who attended the Global Forum and infiltrated government delegations, in some despair. Their central concern is with injustice and poverty, which is killing 40,000 children a day, and with the forces that perpetuate it.

For those especially concerned with education, health and family planning to improve the lives of women,

families and children and to ease population pressures, the \$9 billion a year needed for population programmes by the year 2000 remains part of the total that the conference merely "noted".

Words at Rio

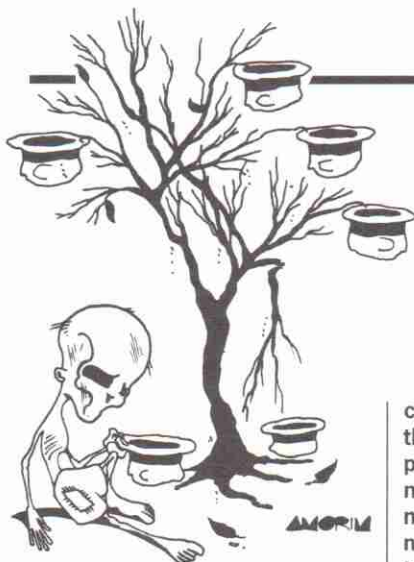
There was a marked contrast between the 'committee-speak' of Agenda 21 and the words spoken in Plenary sessions.

The nearest Agenda 21 came to plain speaking on population was in Chapter 5: "The growth of world population and production combined with unsustainable consumption patterns places increasingly severe stress on the life-supporting capacities of the planet."

And on the link with women's development the following is also from Chapter 5: "Awareness should be increased of the fundamental linkages between improving the status of women and demographic dynamics, particularly through women's access to education, primary and reproductive health care programmes, economic independence and their effective equitable participation in all levels of decision-making."

Compare this with Lady Chalker, British Minister for Overseas Development: "I am against concepts like 'population control'. They are unhelpful and they cause offence... We must agree on one fundamental principle behind all action that is taken to address population issues. My Government's position is that women and men should be able to choose when to have children, and should have the means to put those choices into effect."

Others were more outspoken. Jacques Cousteau



This cartoon by Inês Amorim is one of many produced by an international team of cartoonists in one of the three conference newspapers: Terra Viva, edited by Inter Press Service.

at 80 had this to say: "The fuse connected to a demographic explosion is already burning. We have less than ten years to put it out. There should be a general mobilization to reverse the trend and to avoid the 'population big bang'... Surviving like rats is not what we should bequeath to our children and grandchildren."

Gro Harlem Brundtland, the Norwegian Prime Minister, stressed the interlinked issues: "Unless poverty is alleviated, there is no chance that we will be able to stabilize the world population. It has grown by 500 million since the (Brundtland) Commission last met five years ago. We must deal with population growth through an integrated human rights approach, including education and the enhancement of the status of women, improved public health, and family planning."

Finally, the Conference Secretary-General Maurice Strong was direct: "Population must be stabilized, and rapidly. If we do not do it, nature will, and more brutally."

Church and population

Population became a central talking point among religious leaders and church groups at the Earth Summit, writes Michael Kepp.

The World Council of Churches (WCC), which is mainly made up of Protestant and Orthodox churches,

came out most strongly on the need for population policies. In a pre-Summit meeting held in one of Rio's most impoverished neighbourhoods, bringing together 176 global church representatives, the WCC argued that couples should have more choice of birth control methods.

"While the Catholic Church is against the methodology of using artificial birth control to decrease population growth," said WCC General Secretary Emilio Castro, "the WCC believes that the responsibility of choosing the methodology belongs to the couple."

And a WCC document issued after the meeting stated that "family planning information and services ought to be available as a basic right. Women, in particular, have a right to reproductive freedom and to the conditions in which choice is possible."

Vatican representative Angelo Cardinal Sodano, secretary of state of the Holy See, countered such sentiments with the Vatican's point of view when he addressed the Earth Summit's plenary body on June 13.

"Everyone is aware of the problems that can come from a disproportionate growth of the world population. The Church is aware of the complexity of the problem," he said. "But the urgency of the situation must not lead into error in proposing ways of intervening. To apply methods which are not in accord with the true nature of man actually ends up by causing tragic harm..."

Voices of the Earth

During the Rio Earth Summit an extraordinary series of meetings took place writes Herbert Girardet.

Called the "Earth Parliament", it brought together indigenous people from all over the world, as well as environmentalists, scientists and politicians.

The "Earth Parliament" showed that indigenous and traditional peoples, even if unused to microphones, are highly articulate defenders of their old-established cultures. They see a future for themselves only if their land rights can be assured, allowing them to practise their sustainable farming and collecting methods. Their understanding of the environment and its huge variety of food and medicinal plants is of great significance. Here is a knowledge of vital importance for the future of human life on earth. (See "The Law of the Mother", page 16.)

Helping the street children

During the Earth Summit, most of Rio's estimated 7,000 street children, most of them sidewalk vendors, were nowhere to be seen.

"Police simply told the kids that unless they left their Zona Sul hangouts, they'd haul them away," said Ana Filgueiras, with the Brazilian Centre for the Defence and the Civil Rights of Children and Adolescents (CBDDCA), a Rio-based NGO that provides health outreach to street kids. "The intimidation, for the most part, worked."

She added that now that the Earth Summit is over, most of the street kids have returned to their old gathering spots.

IPPF's affiliate in Brazil, BEMFAM, is involved with the CBDDCA's health outreach. The CBDDCA has 10 social workers and psychologists working on the health concerns of the street children. These "educators"

■ Special thanks to Pathfinder International which made possible our reporting from Rio, and to BEMFAM who distributed People & the Planet at the Global Forum.

teach them about the prevention of AIDS and of sexually transmissible diseases. They also advise young street girls how to avoid pregnancy.

Population a priority

National policymakers should make population a priority, according to the World Bank's latest World Development Report on 'Development and the Environment'. As the second of seven suggestions "to guide action", the Report stresses: "For the sake of both development and the environment, population issues need more attention. Educating girls, enabling women to earn cash incomes and to participate fully in decisionmaking, and investing in better-equipped and better-financed family planning programmes all allow women to determine their own reproductive behaviour."

The Report suggests that inadequate attention has been given to the environmental problems that damage the health and productivity of the largest number of people, especially the poor. Priority should be given to the one-third of the world's population that has inadequate sanitation and the 1 billion without safe water; the 1.3 billion people exposed to unsafe conditions caused by soot and smoke; and the 300 to 700 million women and children who suffer from severe indoor pollution from cooking fires.

It comments that the close link between poverty and environmental problems "makes a compelling case for increasing assistance to reduce poverty and slow population growth and for addressing environmental damage that hurts the poor". ■

Putting people in the picture

Human activities are threatening the planet's network of parks and protected areas. Earlier this year the largest gathering of conservationists concerned with these treasures of natural and cultural diversity met in Caracas, Venezuela. Their special focus was on people. John Rowley reports.

It is a sign of the times that environmental conferences are getting ever bigger and more frequent. The Fourth World Congress on Parks and Protected Areas, held in Caracas in February, kept to its 10-year cycle but was by far the biggest so far held, with over 1,700 participants.

"There has been a fundamental change" the Conference Secretary-General, Jeff McNeely, said. "This meeting involves a much broader constituency than at our last gathering in Bali, where the emphasis was on the protected area manager. Here we are looking at how protected areas fit within the overall picture of society. And that brings in a whole set of people with whom we were not interacting before."

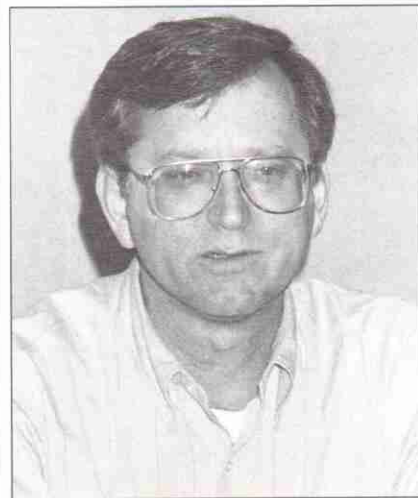
Keen-eyed park managers and rangers were, in fact, mixing on the terrace of the Caracas Hilton with economists and ecologists, government officials, biologists, wildlife scientists, donors and demographers – including a smattering of women.

Given the title Parks for Life, the emphasis was on people. For protected areas of all sorts are under human pressure, whether they be national parks, game reserves, World Heritage sites, marine parks or protected landscapes.

The pressure can come from armies, or tourists, migrants, developers or just growing populations inside and outside the parks, many of whom resent restrictions on their access to traditional lands or sources of income.

"This leads us straight to the fundamental problem of how local

people can earn more benefits from parks and protected areas," said McNeely. "Without the co-operation of these communities it will be impossible to preserve sites which are of outstanding importance to the whole world."



"I am not being pessimistic, just realistic. Protected areas everywhere are at greater and greater risk ... Without the co-operation of local people, it will be impossible to preserve sites which are of outstanding importance to the entire world." Jeff McNeely, Chief Conservation Officer, IUCN

The problem gains added urgency as the geographical spread of protected areas grows. No less than 5 million km² have been added to today's total of 6.5 million km² since 1970 – and nearly 2 million km² since 1982. Today, there are nearly 8,500 sites on the UN list covering an area larger than India, or about 5 per cent of the Earth's land surface. Conservationists hope to expand the total to 10 per cent in the next ten years.

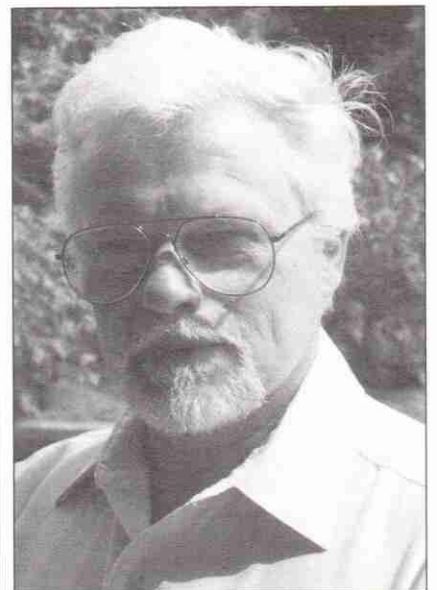
Mostafa Tolba, Executive Director of the UN Environment Programme (UNEP), for one, believes that a better option is to improve the parks that we have, giving them a sounder financial base, with a better legal framework to protect global biodiversity and a co-ordinated system of country studies

using modern information technology. The trouble is, as several speakers pointed out, that many parks exist only on paper, and others are little better protected.

In India, only 21 of the 52 national parks have completed the formalities needed to give them the full force of law. In the Caribbean only a third of the protected areas are achieving their objectives and even in Norway or New Zealand powerful forces justify the logging of the remnants of ancient forests on economic grounds.

Perhaps the best illustration of the pressure on protected areas came on the last day of the meeting when the managers of seven of the world's greatest parks presented their story in words and on film.

One of these involves the proposed biosphere reserve, straddling Costa Rica and Panama, and taking in the beautiful Talamanca mountain range. Here small farms are giving way to banana and pineapple plantations resulting in a flood of 12 million gallons of highly toxic pesticide into the rivers. Faced with a crushing external debt the foreign



"The whole underlying rationale of this Congress is to consider the results and consequences of population pressures." Arnfinn Jorgensen-Dahl, UNFPA

Surui family in the Brazilian Amazon: indigenous peoples are under pressure in many countries.

exchange the plantations can earn is needed. A road through the range has brought coastlines in reach of European markets and oil pipelines and hydro-electric dams are proposed. Mining activities also threaten the local Indian reserve, where population is growing fast.

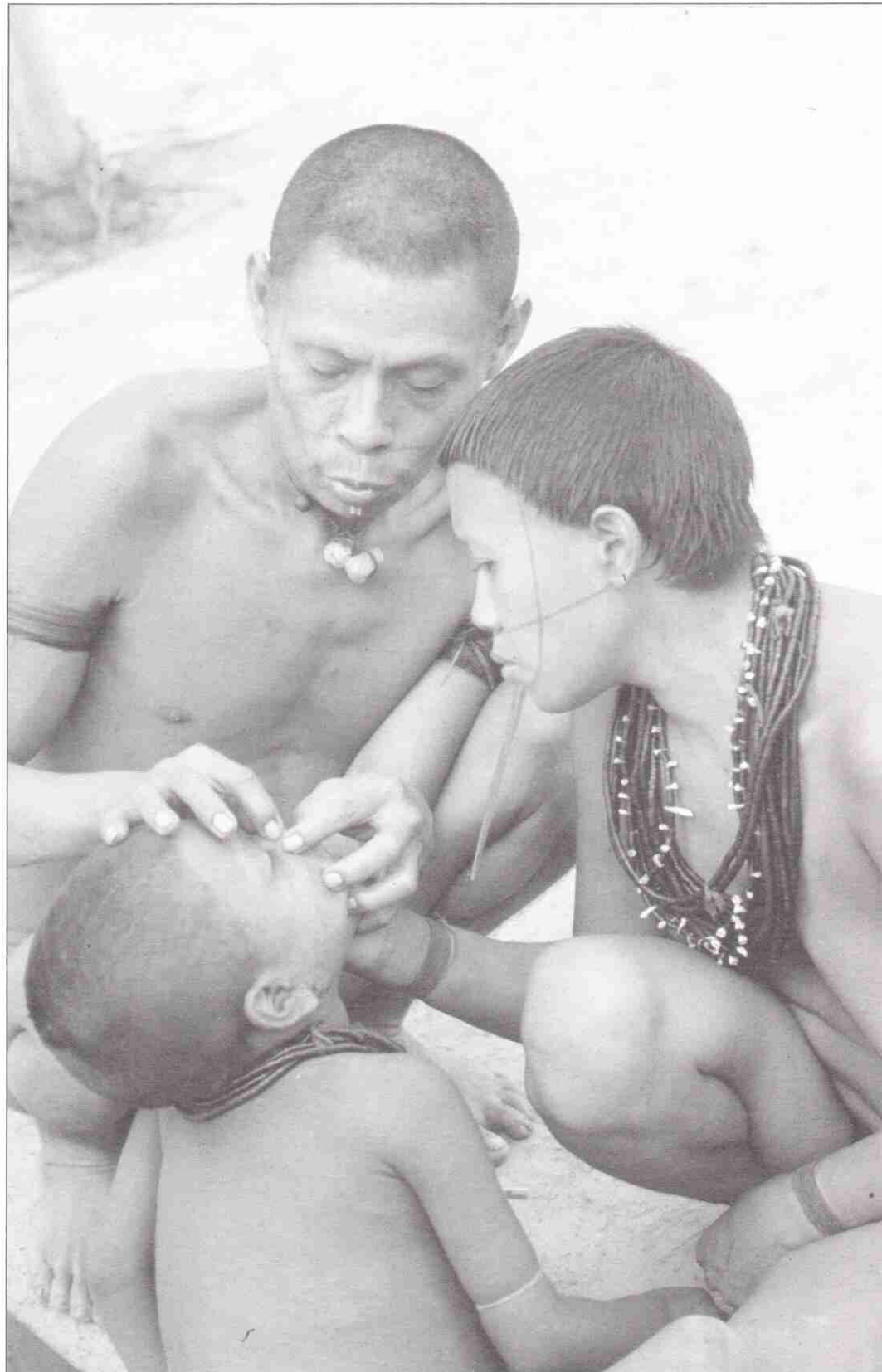
Another example is the 15,000 km² Serengeti World Heritage site in Tanzania and the adjoining Ngorongoro biosphere reserve. Here growing population has made

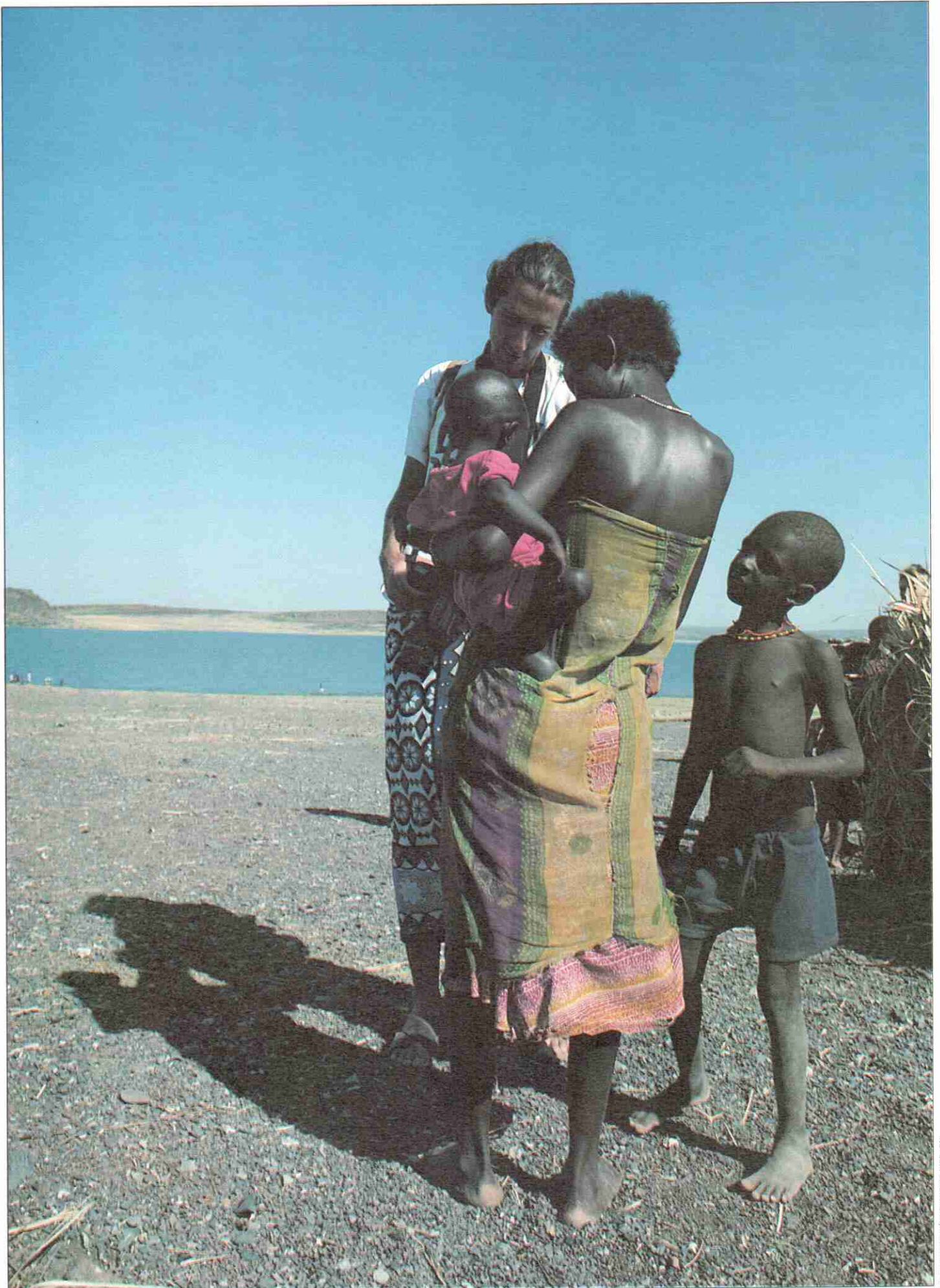


"We will not save the parks unless we save the people too, and we will not save the people unless we save the parks as well." Sir Shridath Ramphal, President, IUCN

the Serengeti an island in a sea of human settlements, with resulting agricultural encroachments, poaching, cattle rustling and tourism. Somehow, conservation here, as elsewhere, has to be done by the people for the people.

Another critical problem is looming in Nepal, where a vast billion-dollar dam is to be constructed in the shadow of Everest, including hydro-electric stations and over 200 kms of road, which will act as a magnet for many of the basin's 400,000 people, who are on course to double by 2020. Here Chinese and Nepalese scientists are co-operating to set up a cross-border park aimed at combining cultural conser-





Visitor with El Molo family, Lake Turkana, Kenya. Carefully managed tourism can be enriching for visitors and local people.

vation with nature conservation in one of the most fragile and precious landscapes in the world.

Nor are the pressures of people confined to the developing world. Founded just over a century ago, the Yosemite National Park in the central Sierra Nevada Mountains of California, is drowning in tourists. The 308,000 hectare park, described by UNESCO as "of outstanding universal value" has seen the 820,000 tourists who visited in 1950 grow to 3.5 million – 90 per cent of whom tour the park in cars. Yellowstone National Park, the mother of the modern concept of parks, is also fighting for a sustainable future in the face of a multitude of pressures, including sophisticated poaching.

On a broader scale Norman Myers warned the meeting that the linked pressures of population, climate change, land hunger and deforestation could together threaten the last strongholds of biodiversity:

"We must anticipate that within little more than a generation there will be twice as many people, seeking three times as much food and fibre, demanding four times as

"We must plan for an age of unprecedented change and pressure, arising from growth in human numbers, growth in human resource needs, and the pressures of pollution, water scarcity and climate change . . . Agricultural zones must inevitably change, and the crops grown in particular areas will alter. The basis of some national economies will change, and people will move in large numbers . . . pressures in the coastal zones will be especially intense. Resources there will be squeezed between rising sea levels and mounting human population." Dr Martin W. Holdgate, Director-General, IUCN

much energy, and engaging in ten times as much economic activity. In other words we shall be trying to build several more worlds on top of the one we already have – and already the present one is proving



"Women have as much claim on our conscience and our resolve as our polluted air, contaminated seas, disappearing forests and the deteriorating land base." Beti Astolfi, Senior Adviser to UNIFEM

too much for the assured survival of many protected areas."

Dr Martin Holdgate, Director General of IUCN, summed up the situation when he said that "for the first time in the history of the Earth, the dominant agent of change is a single species – our own".

That species was, he said, exerting its influence in three ways:

- through rapid human population growth, projected to take total numbers from 5.3 billion in 1990 to between 10 and 12 billion a century or so hence
- through escalating resource demand, especially in the wealthier countries with threatened changes in global climate and sea level
- and through severe pressure of poverty in less developed countries, leading, among other things, to habitat transformations and losses of biological diversity.

"These generalizations conceal a very complex real situation", he

said. "But for our purpose it is sufficient to note that the human demographic momentum is uncheckable on any short timescale; that escape from poverty will demand economic growth and industrial development over most of the globe; and that while the best agricultural land, used sustainably, can feed more people, some encroachment on what are now natural habitats is inevitable."

Unless there was hard cash and unless the global alliance called for in *Caring for the Earth* (the World Conservation Strategy) was formed at the Rio summit, he did not see how some countries could avoid increases in mortality as a result of environmental stress and falling "carrying capacity". Efforts to grow more food had already resulted in misuse of over half the world's rangelands. Water was a limiting resource in many regions, and fishery yields were near their limits.

For protected areas this meant planning for an age of unprecedented change. Agricultural zones will shift and people will move in large numbers. Pressures on coastal zones will be especially intense. Ecosystems will shift and extinctions will increase.

"For the first time in the history of the Earth, the dominant agent of change is a single species – our own." Dr Martin W. Holdgate, Director-General, IUCN

Business as usual must be rejected, said Dr Holdgate. Few wilderness and strictly protected areas will remain. Most protected areas will have multiple use "where sustainable agriculture, pastoralism, forest, fishery or wildlife use proceeds side by side with tourism and the management of land to retain high biological diversity." And all areas, in a sense, must be protected. "Not just the jewels in the crown, but the metal that links them."

It is in the light of this scenario that IUCN is paying increasing attention to the population factor, and to gender issues. ■

Coping with demographic change

Trying to separate out the demographic factors in future planning of parks and protected areas is not an easy task.

As a recent World Bank report on *People and Parks* shows¹, there has been an increasing emphasis on integrated projects, which attempt to link the needs of local people with the conservation of natural resources. But the issue of population growth or decline and its distribution has been incidental rather than central to much of this work.

To try and fill this gap one of the 50 workshops at the Caracas Congress focused on the issue of Protected Areas and Demographic Change. Organized by the Social Sciences Division of IUCN, the workshop presented a series of case studies which illustrated how diverse and complex the relationships are.

One common theme of these reports was the importance of finding out more about how people live in and around protected areas and their demographic profile, if management and conservation plans are to be successfully developed. This means knowing not just numbers, but birth and death rates, migration patterns and population distribution. It means understanding local gender roles and land tenure systems, how park resources are traditionally used and how these practices are changing. It also meant understanding the impact of population growth and human activities outside the parks.

One example of such information gathering was given by Rosa Vázquez (page 20) who spent time with the Cabecar people in the Telire Reserve in Costa Rica, who live a self-sustaining but changing life. If their society is to survive the modernizing process, she concluded, the forest in which they live must be conserved, and the Cabecar must be involved in that task.

Elsewhere, as in El Salvador's Montecristo National Park or in the



Tai National Park in Côte d'Ivoire, population pressures are more immediate. Melanie Machado reported from El Salvador on a rare example of how women are involved in a community development project which includes reforestation and soil conservation – including tree nurseries and production of medicinal plants – alongside

community involvement in schools, housing and in mother and child health care and family planning. One result is that some families are choosing to move out of the park to take up farming on better agricultural land at a land bank which has been identified for them.

In the Tai Forest, by contrast, where there is heavy migration into

Fuelwood loaded on a boat in a buffer zone of Korup National Park, Cameroon.



the region of refugees from Liberia and of farmers from other parts of the country and from Burkina Faso, the emphasis has until recently been on regulation and punishment. There are no family planning services and women have not been involved in efforts to set up a buffer zone. Dulce Castleton and Leonie Bonnehin, reporting on an IUCN

investigation, said that women were at once the most over-burdened section of society, but the most willing to be involved in tree planting and other conservation measures. (See page 14.)

Here, as elsewhere problems of land rights were a major obstacle to conservation efforts. In the Tai Park, managers give licences to

forestry companies to cut trees on land to which local farmers believe they have got title. As a result over 80 per cent of the land is under litigation. Similar problems were instanced in the Serengeti National Park, where the Maasai resented the creation of a buffer zone which deprived them of yet more traditional lands. Local people needed a sense of permanence, protection and responsibility if they were to co-operate in conservation plans.

It was a point reinforced by Ali Bhuiyan, a Forest Conservator from Bangladesh, who said attempts to evict the increased flood of people into the country's last protected forests had failed. There was no alternative but to find a compromise solution which allowed people and protected areas to live together. (See page 13.)

In the case of Bangladesh, one answer was agro-forestry, with loans to small farmers who could earn some \$550 a year from their 2-acre plots. But it was essential, he said, that local NGOs should be involved, to bridge the resource gap and the credibility gap between government and people.

Such people-centred approaches were also emphasized in a detailed report from Zimbabwe on efforts to help local people benefit from wildlife management within the country's many protected areas. (See page 12.)

The interdependence of wildlife and people was taken up by Patricia Waak, Head of Audubon's Population Programme. Reporting on Audubon's programme to compare what was happening to selected ecosystems in the United States and seven developing countries, where population growth and wildlife management were involved, she said there were many common problems. In many cases, however, the impact of technology and consumer pressures in the United States had led to greater environmental degradation than in areas of the developing world subject to intense population pressure.

MAURI RAUTAKAR/WWF



Woman in Communal Area carrying game meat, Kanyurira, Zimbabwe.

A living from wildlife

Not so long ago, the people of Nyaminyami in Zimbabwe lived in fear of, and alienation from, the wildlife of the area – which includes elephants, buffaloes and hippopotami. But now, as a result of the Communal Areas Management Programme for Indigenous People (Campfire), they are beginning to see the animals as a valuable resource which they are anxious to conserve.

This remarkable turnabout has occurred as a result of the Government's recognition that the rural communities had come to regard national parks and forest reserves as wastelands from which they obtained nothing. It decided that the responsibility for managing natural resources should be given to the people who coexist with them, and that they should reap the benefits of any exploitation of resources.

Nyaminyami has some of the poorest, most infertile and most arid land in Zimbabwe, on the shores of Lake Kariba, bordering Matusadona National Park.

In the past, a variety of livestock was kept: cattle, goats, sheep, chicken. Three crops a year were harvested from the alluvial river beds and the people hunted, fished and collected

wild foods from the now-protected areas. But rapid population increase and scarce natural resources such as grazing land and animal watering points contributed to growing poverty.

Wildlife that damaged crops, attacked people and livestock, and competed for agricultural land and water, contributed to alienation from them. At the same time natural resources were being degraded: trees cut for fuelwood, wildlife lost to poaching and erosion on the overworked hill slopes.

Over half Zimbabwe's population of more than 9 million lives in the communal areas. Here population is growing fast, both from high birth rates and migration.

Several factors have led to increased movement to fragile areas: skewed land distribution, agricultural policies that encouraged cash cropping and ranching in the arid zones and population growth. The situation has been made worse through degradation of overused land elsewhere, resettlement schemes and the eradication of the tsetse fly from large sections of the Zambezi valley.

Campfire seeks to blend conservation of natural resources with a tolerable standard of living for local people by getting them to manage the resource, through established district councils, and to receive the benefit from so doing. Wildlife is the first

resource to be chosen; soil, water and vegetation may follow. Wildlife, especially large animals, are abundant and a better way of using marginal land than cropping or animal husbandry, requiring no set-up capital. Small offtake numbers generate substantial revenue, while recreational safaris can operate with no depreciation in animal numbers.

One example of this work is the Nyami Trust, which was set up in 1989. The community receives a proportion of safari hunting fees, plus some meat from culled animals. Out of these receipts, the funeral expenses for deaths arising from animal attack are paid, and fencing has been built to prevent attack to people and crops.

Now the area has opened up to economic activities, other NGOs and government bodies have started to help with various improvements. For example, Save the Children Fund is trying to ensure safe drinking water close to the community. It is also trying to encourage family planning, despite some resistance in a situation where polygamy is still practised by some and infant mortality is high. Tonga women grow crops and look after the household while the men build houses, granaries and clear new fields. One of the lessons learnt is the need to involve women in Campfire projects which means reducing the time spent on other activities like collecting water and fuelwood, and providing better health care.

Efforts to slow population growth are important because wildlife populations come under threat when population density gets too high. This is especially true for elephants which are crucial as they form the basis of much safari hunting which accounts for up to 90 per cent of the income of many district councils.

Devolution of benefits and responsibility down to the producer communities is also essential, but has been problematic. In 1990 only 25 per cent of wildlife revenues for Nyaminyami District Council found their way back to the next level, the wards (each representing about six villages and 4,000 people).

Elsewhere, as in the Kanyurira community in the Zambezi valley, the Campfire project has led to real improvements in household incomes as well as to funds for a new clinic and school furniture. It has also meant a new level of community involvement and concern for local habitats. Poaching has been almost eliminated as have destructive, late-season bush fires.

Dorothy Musokotwane and Liz Rehoy



Agroforestry to the rescue

Land is a scarce resource in crowded Bangladesh, where population density is 800 people per square kilometre and getting worse each year. Sixty per cent of the population is landless. The competition for land – for human settlement, farming, grazing, fishing or for other uses – is intense, and forests and protected areas are frequent targets.

Aboriginal tribes have lived in the forests for generations, practising slash and burn and subsisting on jungle food. Modhupur and Bhawal are two most important national parks. In Modhupur 3,500 families (1,386 tribal) – some 20,000 people – are now living illegally. Altogether, some 3,000 hectares of forest (out of the park's total 8,436 hectares) have been cut down for cultivation.

Bhawal, on the outskirts of Dhaka, caters for the recreational needs of the capital city's 3.4 million people. While some 4,500 families live harmoniously inside the park land of just over 5,000 hectares, there are a further thousand squatters who resist any legal measures to remove them. Bhawal's forest cover would have been wiped out if it had not been declared a protected area.

Efforts to conserve the forests have

concentrated on trying to oust the tribals from the protected areas, without much success. Once it may have been possible to set aside areas of outstanding scenic beauty, biological diversity or wealth of rare species and exclude people from them, but now parks and other areas are under pressure from the increasing population and poverty.

The time has come for a new strategy to preserve the protected areas by enlisting the co-operation of the people who currently threaten them, and at the same time offer the people an answer to their survival needs.

One such is the agroforestry land management system recently introduced in the two protected areas, whereby the residents of the forest are supplied with land on which to grow perennial trees and seasonal agricultural crops in alternate strips. A written agreement is drawn up between the forest farmers and the Forest Department and the farmers are guaranteed all the agricultural crop and half the forestry crop. Each family is allotted 1.22 ha.

The crops for the agroforestry farm, which are decided by the Forest Department, include paddy, groundnut, cotton, water melon, cassava and vegetables, while amongst the tree species, all harvestable on a six-to-seven year felling cycle, are eucalyptus and acacia. The cost of planting tree seedlings is borne by the Forest

Agroforestry has been successful elsewhere in Asia: Arfak Mountains Nature Reserve, Irian Jaya, Indonesia.

Department. The families look after the trees which grow between their crops, and agree not to damage trees (and not to light fires or graze cattle in the agroforestry farm). In return they receive in the first year seeds and seedlings for the agricultural crop, fertilizer, insecticide and technical know-how. After this they must retain seed for future cultivation. It is possible for families to make an annual income from farming in the range of Taka 20,000-24,000 (\$550 to \$650) – an adequate subsistence living. In addition each family receives Taka 12,000 (\$325) from the timber harvest every six years.

The programme has been accepted by squatters in the forest and by ethnic groups and in two years much of the area where trees had been felled has been replanted.

Meanwhile, non-government organizations will help to organize education, family planning, cottage industries and other income-generating activities. With the introduction of family planning and strict regulation of new arrivals in the protected areas, it is hoped to achieve a population level that proves sustainable. ■

Ali Akbar Bhuiyan



One example of this, presented to the meeting, was what was happening to the Platte River system in the South West United States and to the Indus River Valley system in India. In many respects, said Dr Kenneth Strom, the Indus was in a better shape than the Platte, where water use in the city of Denver, irrigated farming and proposed hydro-electric dams were making unsustainable demands on the available water resources. These demands are not only threatening the river but the unique migrations of millions of waterfowl and of half a million sandhill cranes – 80 per cent of the entire world's population of the species.

The need was to go to the people

and explain what is happening, said Dr Joseph Alper of Minnesota University.

Irrigation and hydro-electricity dams were also threatening the 2000-mile long Indus, said Malik Mumtaz, a Wildlife Conservator from Pakistan. As the human population grew so did the pressure on wildlife. Dolphins, deer, otters and cranes were all declining in numbers. Nearly 3 million hectares of riverine forest and an equal area of mangrove were in danger by salinization as the river dries up. Another 20 dams and barrages are planned in India and Pakistan in addition to the 18 already in place. As in the United States efforts were now needed to inform and educate

local people. Wildlife clubs were being formed alongside other conservation education programmes.

A key aspect of population pressure on wetlands – the frequent damage to upstream habitats – was set out by Professor Malin Falkenmark of the Swedish National Science Research Council. Wetland habitats were under siege from upstream land use which was intensified by population growth, she said.

Conventional conservation tools, including the local monitoring of changes, were outdated. As long as upstream activities were not controlled protection of the downstream wetlands was virtually



Left: Woman and wildlife in the Bangweulu Basin wetlands, Zambia. Below: Professor Malin Falkenmark.

Guidelines for doing this have to be developed.

Patricia Thomas, a social scientist from Canada, said that more had to be known about the behaviour of the human population, as well as the environment. It was especially important to look at the complementarity and conflict of gender relations in terms of resource use. This was a big step forward from Women in Development



JOHN ROWLEY/IFPE

impossible. Management guidelines were needed, she said, which would take indirect habitat threats fully into account.

Conclusions to such a varied set of presentations, not all of which are touched on here, are not easy to draw, but a few stand out.

Dr Pietronella van den Oever, conference convener and Head of the Social Sciences Division at IUCN, was clear that national census data is quite inadequate for measuring the population in and around parks. Better ways of collecting demographic data have to be found. The principle had to be accepted that each project has to do its own demographic preparatory work and subsequent monitoring.

approaches because it could lead to more equitable decision making and genuine empowerment.

Patricia Waak emphasized that in Audubon's case studies it was shown that patterns of consumption and the use of resources frequently had an even greater impact than population. But it was vital to keep protected areas in place, to stabilize human numbers, to give local people ownership of resources, to identify fragile zones and to help local people understand why these had to be cared for. ■

¹People and Parks. Linking protected area management with local communities. Michael Wells and Katrina Brandon with Lee Hammah. The World Bank, WWF, USAID. 1992.

Gone with the wind in Côte d'Ivoire

The Tai National Park in south-west Côte d'Ivoire is a World Heritage and Biosphere Reserve of 340,000 ha.

The surrounding area has experienced a very high rate of population growth for the last two decades, with the population rising from 3,200 in 1971 to 11,100 in 1985 to 57,000 in 1991. This is due to three factors: the influx of migrants from the Sahel; the influx of refugees from Liberia (since December 1989); and a high birth rate of around 3 per cent (probably an underestimate since many births are not reported).

This population surge has been accompanied by degradation of natural resources, particularly forest resources. High population density is also an obstacle to reafforestation. These effects are reflected in the following local sayings:

■ "In the end, we'll be swept away by the wind – there is no more forest to protect us." Expression used by the indigenous people when they are affected by the heavy storms at the beginning of the rainy season.



■ "I have a weight on my back and/or a weight in my stomach (allusion to the child on her back and/or the pregnancy she is carrying), I have no strength left for planting many trees." Expression used by many women interested in a project to domesticate forest plants, but who have too many children to look after.

■ "We do not want many children because we have no forest left to feed them and send them to school." (Allusion to the shortage of more fertile forest soil for subsistence and cash crops.) ■

Dulce Castleton and
Léonie Bonnéhén



The Law of the Mother

by Elizabeth Kempf

"The Law of the Mother" has ruled the indigenous people of the Sierra Nevada in Northern Colombia for

thousands of years. This complex code – developed during pre-Colombian times – regulates human behaviour in harmony with the plant and animal cycles, astral movements, climatic phenomena, and the sacred geography of the Santa Marta massif, the highest coastal mountain in the world. Three groups of indigenous people who have been the traditional guardians of the ancient Law of the Mother have recently regained title to their ancestral lands.

Two years ago the government of Colombia returned around 25 per

cent of its territory to its indigenous people. Today the Kogi, Arsario and Arhuaco Indians of Northern Colombia are reclaiming the land of their ancestors who built great stone cities and sophisticated systems of agriculture, terracing and irrigation. They are rebuilding their villages in two national parks and indigenous reservations. Farmers who settled in the area over the past few decades are being moved out of the reserves. Relocated onto neighbouring buffer zones, these farmers – many of whom used to raise illegal marijuana, cocaine and poppy crops – are being trained in the revitalized agricultural techniques that had been largely lost over the years.

Spearheading rehabilitation of the Indian lands and villages in the Sierra Nevada as well as developing training programmes for the displaced farmers is a Colombian conservationist, Juan Mayr, founder of the Fundación Pro-Sierra Nevada de Santa Marta. The organization, whose roots go back some 16 years, has a team of 60 environmentalists who navigate the strife-torn region. In the past five years, the Foundation has established research and educational centres that serve as conservation models for both local farmers and indigenous people living in the national parks and reserves.

"The main purpose of the Foundation is to bring to the inhabitants of the remote mountainous region techniques of sustainable development which combine modern science and traditional knowledge," says Mr Mayr, one of several hundred people who voiced his concerns on this most topical theme at the Congress workshop on People and Protected Areas.

Not surprisingly, the cross-cutting theme of this workshop, chaired by Dr Claude Martin, Deputy Director General of WWF, drew more than 300 participants to its opening session.

For six days the voices of local and indigenous people revealed

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Indigenous people of Northern Colombia have managed their lands sustainably for centuries. Left: Arhuaco mother with her children. Right: Kogi family in their Sierra homeland.

that the communities like those in the Sierra Nevada had much in common with people residing in and near protected areas around the world.

Their messages came from all corners of the globe, from the Imgrauen fishermen in Mauritania in the Banc d'Arguin National Park who have been catching mullet with the help of dolphins for centuries – and from India, where the Bisnoi people of the Rajasthan desert have conserved their fragile ecosystem by creating their own unofficial protected areas.

From Niger's Aïr/Ténéré National Nature Reserve in Sahelian Africa, workshop attendees learned that a local project executant working for WWF and IUCN had been kidnapped, leaving a 12-year conservation effort in a state of suspension. From Central Europe they heard how the mayors of 21 towns – whose voices had been silenced by Communism for over 40 years – called on the federal government to create a National Park in order to save the Bohemian forest, one of the last unspoiled woodlands remaining in that region.

The representatives of these local communities gathered together for a closing session and reached consensus on a number of issues including the need to respect and preserve cultural, spiritual and biological diversity. They noted that in the past protected areas had often been established on lands possessed and used by local people without consulting with them. Women in particular, they said, should be involved in setting up and running protected areas. They also acknowledged that in many cases communities have been the victims of inadequate land and resource use patterns, as well as inadequate rural development programmes.

Appealing to the IUCN and other groups present including WWF, they drew up a list of recommendations which they insisted be used to help them become fully active in planning and management

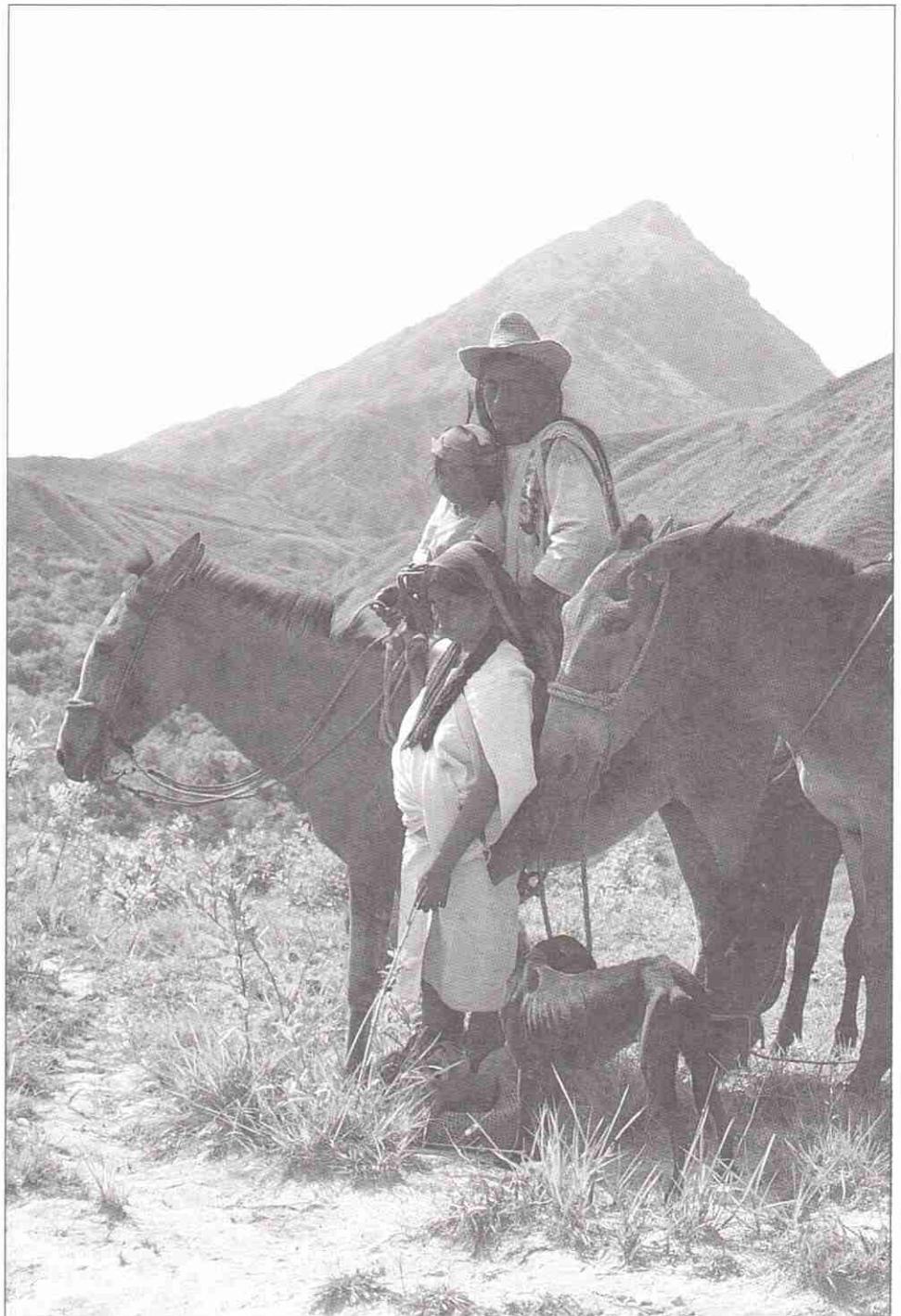
of protected areas.

Recognition of land tenure and intellectual property rights was high on their agenda and they urged IUCN and the Congress to encourage governments to respect and uphold indigenous and traditional rights and tenure where ancestral lands coincide with protected areas.

Although the voices and opinions of indigenous people were heard, many of the groups were not present. Like the Kogi Indians of the Santa Marta of the Sierra Nevada they had sent the message that they wished to stay home and

that they did not want visitors. They wished to remain in their remote villages where they had retreated centuries ago, where they had remained an integral part of the ecosystem, limiting the size of their population, surviving in harmony with the world created by the Great Mother. ■

Elizabeth Kempf is a Senior Editor at the World Wide Fund for Nature and is editing and writing a book for WWF and IUCN on the relationship of people and protected areas.



500 years after Columbus

by *Alejandro Imbach*

Wedged between the two larger land masses of the American continent and subject to both the Atlantic and Pacific climatic regimes, Central America exhibits an incredible mixture of different ecosystems, ranging from several kinds of tropical coast to multiple types of forests, to high mountains, deserts, volcanic areas, lakes and rivers. The seven countries that make up the region – Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica and Panama – are home to an astonishing range of plants and animals.



But today Central America's once-rich natural resource base is disappearing – 60 per cent of its forests have been cut for lumber, firewood or to make room for cotton, cattle or subsistence crops – and the region is in desperate need of an ecologically sound development model, one that could provide important pointers for other parts of the developing world.

The first of Central America's two great populating processes took place around 11,000 BC following the migration of Asian populations to North America after the last

glaciation process. When the ice receded and a corridor opened to the south, these people moved again. During thousands of years, up to five million Mayans lived sustainably (in one of the first fairly urbanized societies) in an area now being destroyed by a few hundred thousand inhabitants today.

The second wave began 500 years ago with the arrival of the Spanish, and gave root to Central America's present economic and political situation. This colonization was concentrated in Panama, Nicaragua (which provided meat, grains and other agricultural products for the mines in Bolivia and Peru) and Guatemala (also a source of agricultural products and other raw materials, and with a large Indian population that provided labour for the conquerors). In Belize, the one English-speaking country in the region, there is yet a third influence: the majority of its people are descended from the black population who were taken as slaves to the Caribbean islands and whose culture spread down the coast to Central America.

Today, the Central American isthmus divides into two: the economically better developed areas of Costa Rica and Panama on one side of the San Juan river and the other countries to the north. Panama's service economy, based on the Panama Canal and trade and finance, contrasts with the other countries' near-total dependence on natural resources. The whole region, however, has been deeply affected by its relations with its neighbour to the north, the United States. The main responsibility for environmental degradation lies in the region's pattern of development, together with population growth. The push to produce agricultural exports like cotton and beef led to over-exploitation of land, and often a high use of pesticides, and earned good profits for an elite group of large landowners, while ever-poorer small farmers were pushed off the fertile land and

forced to clear new areas, usually marginal.

Costa Rica now benefits from having developed a tourist industry, based on its natural beauty, and has the best-protected areas in the region. However, it also has the highest rate of deforestation and its fast population growth could yet jeopardize earlier social and economic progress.

In El Salvador and Guatemala long periods of civil conflict have taken their toll on the economy and the environment. Population density – in El Salvador near to 250 people per square kilometre – and internal migration create further strains. El Salvador has much mountainous territory and limited natural resources. Wealth and the best land are concentrated in the hands of a few families, and there is little industrialization. Guatemala, too, has suffered such problems, though less acutely.

Honduras and Nicaragua retain the highest proportion of forest cover of the countries in the region, despite Nicaragua's years of tyranny, then revolution and the Contra war, and Honduras's own turmoils. In both countries, however, poverty is widespread, basic services are poor and no sustainable use of resources has been established.

Belize has been more peaceful, has achieved some stability, and is now showing more interest in strengthening its Central American links. Its coral reefs and coastal areas offer enormous potential for sustainable development through fishing and tourism.

Their fragile environments and large social problems create enormous challenges for the tiny countries of Central America. The way they deal with them could provide useful lessons for other countries that share their problems but whose need for solutions is not so urgent.

Dr Imbach is Latin American Co-ordinator at IUCN.

Fragile isthmus under pressure

James Ypsilantis

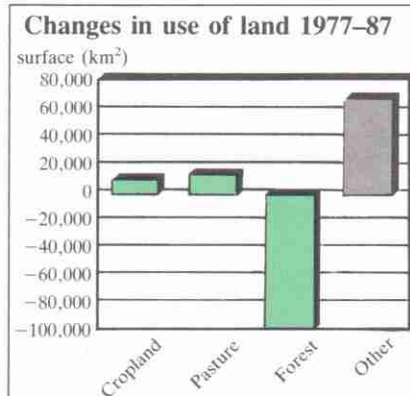
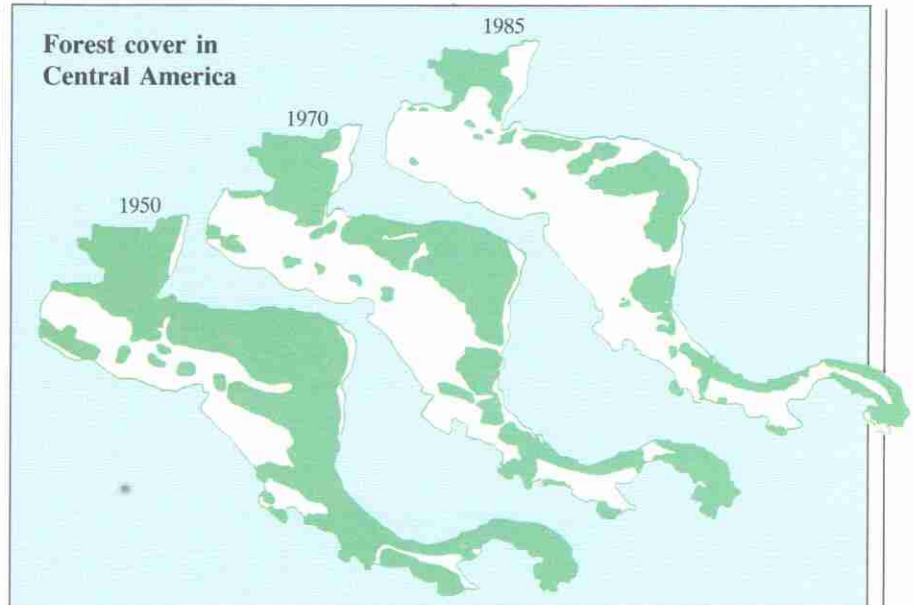
Central America is one of the richest areas of the world for diversity of flora and fauna. In tiny Costa Rica, for example, the 1,300 hectares of rainforest that comprise La Selva Biological Station support more than one and a half times the number of plant and animal species found in the entire state of California in the United States.

This tremendous biodiversity is due to a number of factors. Central America forms the only land bridge between North and South America, it has both Atlantic and Pacific coastlines and is characterized by pronounced variations in altitude and temperature, which combine to create a wide range of different bioclimatic zones. All of these have come under increasing threat over past decades.

Forests are the main repository of Central America's biological treasure. The original vegetation cover of the whole Central American region was forest and, while deforestation has undoubtedly been taking place for centuries, it has intensified enormously since 1950, with the result that closed-canopy forest has shrunk dramatically during the past 40 years. Over two-thirds of all deforestation estimated to have occurred since Christopher Columbus arrived 500 years ago has taken place since 1950.

Meanwhile the population of Central America has been growing fast. Central America, plus Mexico, grew by around 28 per cent in the 10 years 1977 to 1987. At the same time the surface of forests and woodlands decreased by 13 per cent, to 26 per cent of the total land area. Although it is clearly not a simple one-to-one relationship, two of the main causes of this deforestation were increased demand for cropland and for rangelands.

Croplands grew by 4 per cent during these 10 years, to 13 per cent



of the total land area, and pastures by 2 per cent to 37 per cent. Unsustainable agricultural and cattle-raising practices, however, have resulted in vast areas of previously productive land becoming unproductive. During these same years, unproductive lands grew by 14 per cent to 24 per cent of total land area. The percentage of land seriously eroded or degraded now reaches 50 per cent in El Salvador and over 30 per cent in Guatemala.

As a result of increased soil erosion, high sediment loads have been reported in many rivers of the region. The silting of downstream water reservoirs is affecting the region's potential for hydro-electric power generation. Silting and lower groundwater replenishment rates

associated with increases in soil erosion have also contributed to non-sustainable "mining" of groundwater resources to provide drinking water to urban areas such as Guatemala City.

A host of complex and interrelated problems have contributed to land use changes over the past decades: unequal land and income distribution, tax incentives encouraging forest clearing and cattle ranching, inappropriate agricultural and ranching techniques, the collapse of the Central American Common Market, the fall in prices of agricultural exports from, and increases in prices of imports to, the region, as well as natural causes (variations in rainfall patterns, hurricanes, volcanic eruptions and so on). But several demographic factors have played a key role.

The population of Central America is growing faster than anywhere outside Africa. The rate peaked at 3.2 per cent a year in the 1960s, and, though declining, was still above an annual 2.5 per cent in all the countries except Panama in the early 1990s. Central America's population, 22 million in 1980, was 29 million in 1990 (an increase of 31 per cent) and is expected to reach 63 million by 2025 on the UN

Inside the forest

Not many people have taken a careful census of the small communities deep in the tropical forest. Rosa Vázquez, a young student from Ecuador, recently spent several months with the Cabecar community living along the Telire river bordering the remote La Amistad Biosphere Reserve in Costa Rica. And her findings have thrown fresh light on how they use the forest resources.

She found, for example, that the average family used over 8,000 kg of firewood each year and a further 415 kg of timber for house construction.

There is great reliance on bananas in the diet: each person eating on average 1.4 kg of skinned banana each day. But a family also uses 250 kg of game in a year in addition to food such as corn, beans and squash grown on 'slash and burn' plots.

Rosa Vázquez says the 366 Cabecars are not yet putting demographic pressures on the forest; the population density was 4 people/km²; therefore population itself is not yet an environmental threat for the Telire reserve. But their numbers seem to be growing extremely fast. Her estimates of a natural growth rate of 5.7 per cent a year is near the biological limit although the estimate may be affected by the native people's reluctance to admit a death in the family.

The use of modern rifles in place of bows and arrows seems to have added protein to the diet but is already depleting animal populations. Monkeys, for example, have virtually disappeared from the Telire reserve.

Other modern ways are also encroaching: "The local Cabecar people do rely on the forest for medicinal plants. However, modern medicine has had an impact because they rely on aspirin and penicillin for immediate relief. So traditional knowledge is slowly being lost."

The conclusions drawn from her study echo those of others concerned with creating a sustainable balance between people and the forest:

- It is essential to take into account the local population's point of view in setting up a protected area. Their way of life depends on it.
- Management policies and laws are often contradictory. The old Costa Rican laws allowing people to claim

forest they have cleared is in conflict with conservation, because it encourages people to clear the forest.

- The people need the forest to survive. To conserve the people it is essential to conserve the forest.
- There is a contradiction between traditional culture and the community's natural expectations of progress and their desire to have some of the consumer goods and benefits such as health care.

Above all, Rosa Vázquez feels that, because Costa Rica is so small, modern life will sooner or later reach this isolated community. "It is important to support the Cabecar in the process of inevitable change and enable them to make their own choices, while retaining their systems of harmonious living in the forest. Modern society has much to learn from them and other indigenous people!"

This last point was taken up by Melany Machado, who reported to the Congress on a successful effort to work with women in the Monte Cristo National Park in El Salvador.

The Salvadorean section of this park covers only some 2,000 hectares and is home to 280 families. These people are now relocated into two settlements with over 17 per cent of households headed by women.

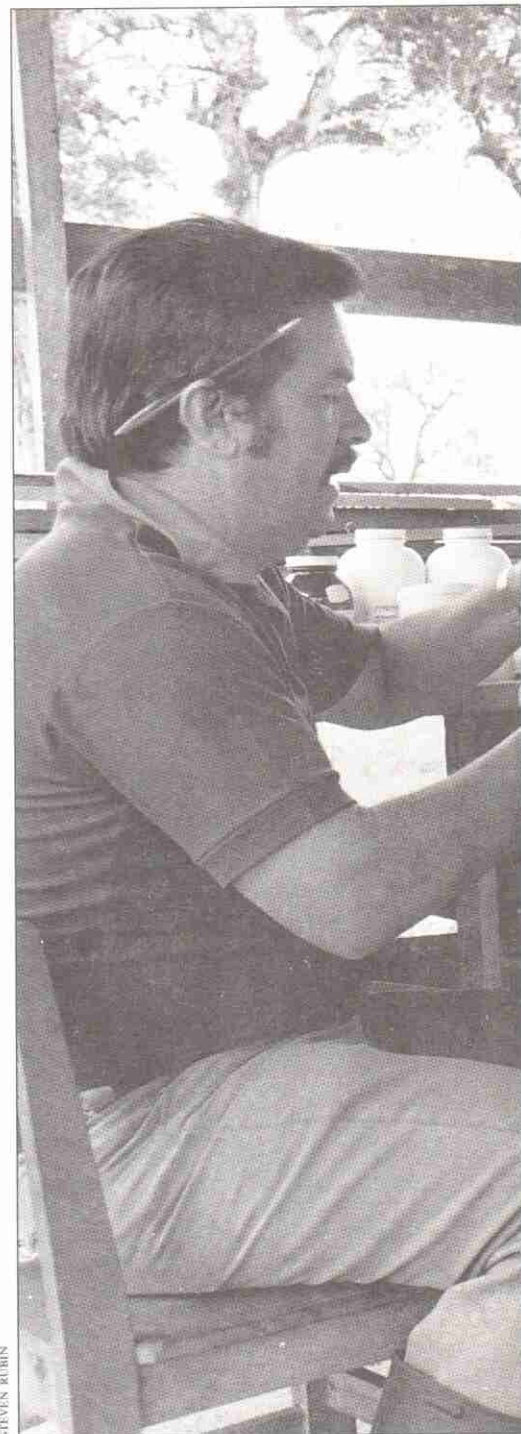
Traditionally, the women played a major role, helping with the farming as well as in the household, but their contribution was largely unrecognized.

Now they are involved in an integrated programme developed by IUCN to sustain and improve their own lives and that of the forest. This includes the development of free nurseries, the growing and sale of medicinal plants, bread making in energy efficient stoves along with health and family planning.

This self-help project has formed a model for other communities in protected areas throughout Central America and has attracted the attention of people outside the park.

Indeed the link with the outside world has encouraged some forest families to seek relocation to land banks set up elsewhere by the government. It has also stimulated other local NGOs to strengthen their bargaining power with the local authorities. ■

John Rowley



STEVEN RUBIN

medium projection.

Movement to, and growth in, urban areas creates more problems. The percentage of the population of Central America that lives in urban areas reached 46 per cent in 1990s: over 13 million. It is expected to continue climbing in the next few decades whereas growth in rural areas is expected to slow after 2010.

Although forests are expected to come under increased pressure because of this growing population's need for fuelwood, it is the demand for agricultural land in the coming decades that is thought to



be the main threat to the forests. To meet the escalating requirement for food, it will be necessary to increase food imports or to increase the amount of food produced for local consumption.

The current foreign debt and trade balance of Central America make increasing food imports, or converting land now used for export crops to producing food for local needs, difficult. This leaves two solutions: increasing yields or bringing new surfaces into production.

The theory that sustainable agricultural technologies evolve and

yields increase to meet extra demand for food as population density increases might stand up where population growth is slow and there is a political will to intensify agriculture sustainably, but it seems unlikely in Central America where neither of these conditions is apparent. Nevertheless, sustainable agricultural intensification is preferable to an expansion of cultivated area, which would come at the expense of the forests, most of them marginal for agriculture.

Further compounding the problem is the fact that future urban

Health worker dispensing in area only accessible by boat, northern Costa Rica.

growth will also mostly take place at the expense of prime agricultural land. Other concerns arise over access to sanitation, the treatment of used waters, and energy. Close to 90 per cent of the energy used by households comes from fuelwood. In urban areas this energy is consumed in the form of charcoal which, compared with wood, is inefficient in calorific terms and adds to the pressure on forested

Saving the promised land

The Petén region of Guatemala, with one of the largest sub-tropical rainforests in Central America, once supported a million people. Now inhabited by around 300,000 people, the area is under serious threat from destructive practices like slash and burn which, though workable in the highlands, are highly damaging in this environment. The situation is made worse by the high population growth rate, estimated at 5.5 per cent a year – which implies a doubling of the population every 13 years.

About a third of the growth in Petén is the result of in-migration from other parts of Guatemala and from neighbouring countries. The Guatemalan migrants move to the Petén for three reasons: environmental, economic and demographic. Some have left territory with heavy soil erosion and water depletion; some areas where production of agricultural export crops on huge farms by a few landholders, including the massive banana plantations, have driven small farmers into ever worse poverty. Some are Kekchies Indians from the Altiplano where land has been fragmented into such tiny plots as a result of high fertility that the plots are now too small to support a family using traditional methods.

Petén is seen as the promised land: trees can be felled and maize grown, then later the land used for pasture for cattle. Once, when population density was lower, gum, pepper, *xate* (a decorative leaf) and quality wood were exploited successfully. These activities, however, brought access roads to the forest and, together with policies and incentives encouraging migration, made the trip to the Petén easier.

The loss of soil fertility and damage to the complex ecosystem of the forest as a result of deforestation and over-use is almost impossible to reverse in this desperate climate. But IUCN's Nakúm-Yaxjá-Naranjo (NYN) Triangle project aims to search out way of

managing and using the forest sustainably, including exploring forgotten indigenous approaches as well as experimenting with new technologies.

There are 20,000 peasant farmers in the area, which covers 3,500 km² of forest (and 26 villages) in the Maya biosphere reserve next to Tikal national park and near the border with Belize. Crucial to the scheme is to involve the local people and to work with them so they begin to understand their problems. "Until quite recently there were few people in the area," says Paula del Cid, one of the small IUCN team involved in the project. "Most are recent arrivals and they often have nothing in common and therefore no sense of community. We have to help them form communities that will take responsibility for their own interests."

Supported by the Norwegian Development Agency (NORAD), the team has begun to work with the community in the archaeological site of Uaxactún. Here it has acted as a go-between for villagers and the National Council for Protected Areas (CONAP), the government agency for the region.

"First, people must have access to the forests and the means to manage them," Paula del Cid says. "To do this they need a feeling of communality and they need basic technical skills. These include how to do a forest inventory, how to manage the forest sustainably, how to do agro-forestry, plant orchards and develop crafts, using tropical wood, for example".

She admits that it will not be possible to support unlimited numbers of people, but thinks that once the community is organized it will be easier to absorb newcomers and to include them in sustainable activities.

"The project aims to show that it is possible to live in the forest in a sustainable way. But the long-term problem of the Petén will not be solved until the land distribution question is dealt with, along with other social improvements which help people to have smaller families", Paula del Cid declares.

César Barrientos and James Ypsilantis

have been comparatively sustainable in their home areas often have a devastating impact in the new areas being colonized, where topsoil is thin and highly erosive once cleared.

Slash and burn is hard work but in much of Central America clearing a plot is sufficient to claim ownership over it. Areas cleared before the rainy season are seeded with the first rains. Provided the rains co-operate (increasingly unlikely, farmers say) and pests can be kept at bay, a sufficient crop to feed the family till the next harvest can be grown.

Unfortunately, soil fertility falls rapidly. Pressure on the land means it is not left fallow long enough to regenerate. As new migrants arrive, previously cultivated lands become useless, and the agricultural frontier moves further into the forest.

A number of programmes are needed to put into wide use agricultural and other techniques necessary to meet future needs sustainably. Slowing the rate of population growth would buy time to disseminate appropriate techniques and also reduce the rate at which prime agricultural land is being lost to urban areas. Conservation organizations can support activities designed to reduce birth rates – building awareness of population as well as environmental issues in the community, helping efforts to improve the status of women (this is still a deeply *machista* society), such as income-generating and other projects, and co-operating with organizations carrying out maternal and child health projects. Infant mortality is still high in rural areas and children are used to collect fuel and water. Women tend to work only in the home and still receive little education. And, at the policy level, conservation groups can help raise awareness of the role population has played in the environmental degradation.

James Ypsilantis is at IUCN New York.

areas.

The increase in rural population, though smaller, may also cause environmental problems. Since all the good agricultural land and pastures have been claimed, usually by large landowners, and land degradation is pervasive on remaining surfaces, rural poverty is already widespread. New rural heads of households are left with few choices

in order to provide for their dependants. Most of these head for the agricultural frontiers, such as the Petén in Guatemala (see page 22).

These migrant peasants are typically poor, with all but the bare minimum agricultural inputs beyond their financial reach. They cannot afford a head of cattle, let alone a herd, and so usually practise agriculture. The methods that may

Diversifying crops: the Nicaraguan experiment

by Alain Meyrat

More than half the population lives in Nicaragua's Pacific Plains (the country's most fertile land) and here, also, a single crop, cotton, has been grown intensively for over 40 years. Not only has this single-crop economy led to massive deforestation – sometimes trees were felled simply to clear the path of spraying aircraft – but wind and water erosion has affected the soil, and extensive use of pesticides has led at times to the breastmilk of nursing mothers containing up to 92 parts per 1,000 of DDT.

This type of farming also encouraged the concentration of land ownership into big 'latifundios' and pushed the subsistence-farming peasants out to marginal land on the agricultural frontiers. Damage to the environment and natural resources was in part responsible for the downfall of the Somoza dictatorship, but though subsequent agrarian reform has brought fairer land distribution, lack of information and training on sustainable methods of farming means the damage has not yet been curbed.

The Pikin Guerrero project is an experiment in sustained development involving 2,200 peasant families in the volcanic area of El Chonco-San Cristobal-Casita. It is jointly run by the Nicaraguan Institute for Natural Resources and the Environment (IRENA) and the World Conservation Union (IUCN). The farmers, who are usually poor, grow corn and beans and continue to exhaust the area's natural resources through cutting and clearing, eroding fragile soils and altering the rainfall cycle, with loss of production and spreading erosion. It is hoped that training in better production methods will lead to higher revenue for the farmers and money for conservation.

With the help of experts 400 farmers have reshaped their pro-



SEAN SPRAGUE

duction systems. Annual crops have been diversified to include yucca, 10 varieties of bean, three of pineapple and four of corn, plus perennials such as coffee, mango, bananas and avocado. Soil conservation practices have been introduced. Women have been encouraged to develop their gardens to grow firewood trees, fruit, flowers and medicinal plants as well as vegetables. Angela Chavarria cultivates gourds, almonds, potatoes and yucca, all good for nutritious soup, as well as Leucaena and eucalyptus trees, coffee bushes and mango, tamarind, papaya, cashew nut and avocado. She also grows flowers. Her husband fenced the land to keep out animals, and prepared the soil. Now she tends the plot and feeds her family from the produce.

Many of the methods are similar to those of the farmers' parents and grandparents before "cottonization". They have discovered that corn and beans can be sown together if low-foliage corn is used and the right spacing employed, and that beans can fertilize the land. Some of the people have been taught about the need for reforestation and have been trained to produce their own tree seedlings in polythene bags as well as in soil banks. "At first they asked why the project did not give them the seed-

Massive deforestation in Nicaragua led to fuelwood shortages and soil erosion.

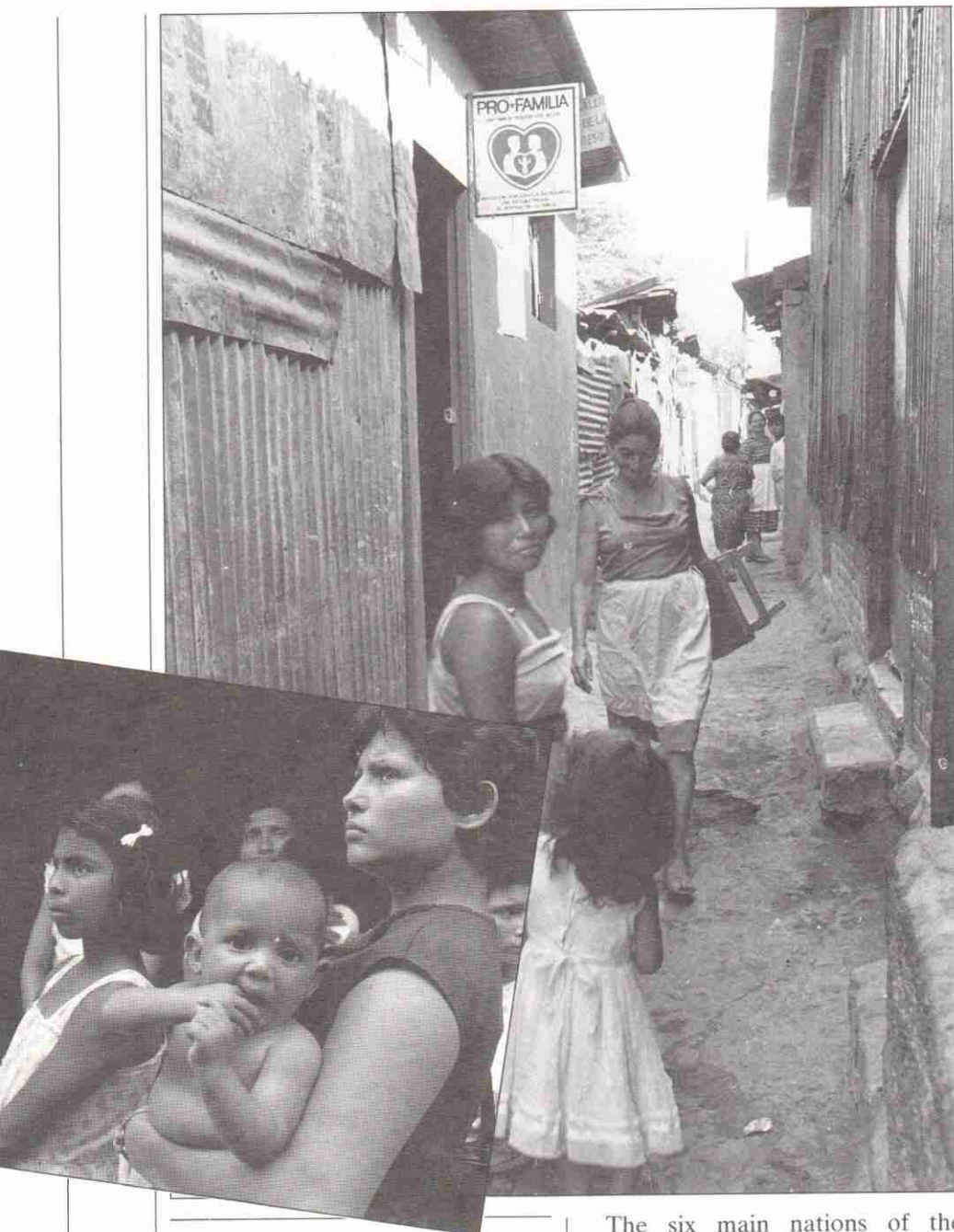
lings, as others did," says Carlos Ruiz, a member of the technical team. "They were told that they received a lot more, as they would be able to grow different types of trees themselves and pass on the that knowledge to their children."

Soil conservation work took longer to get going. But one farmer, Jesús Perez, acted as pacesetter when he observed how a night of heavy rainfall carried away all the seeds. He built terraces and started crops in corridors which have now been copied by many others. Farmers and technical advisers, as well as the non-farming community, are all enthusiastic about the benefit and satisfaction the project has brought. And from the initial pilot 5,000 hectares, the project is now being expanded to cover a further 10,000.

All that is needed now is for this work to lead on to the introduction of family planning to the local people. This would bring health benefits as well as helping to prevent high population growth wiping out the gains in self-sufficiency from the project. ■

Alain Meyrat is Technical Adviser to the Pikin Guerrero project.

Planning for the next generation



by Cecilia Valdés

From dusty Nicaraguan villages, where six or seven children share a bed, to the slums of Tegucigalpa, where two in 10 babies are born to teenagers living in poverty, the perils of having too many people in places too poor to support them hits home.

The six main nations of the Central American isthmus — El Salvador, Guatemala, Honduras, Nicaragua and even relatively affluent Costa Rica and Panama — all face serious population problems, experts acknowledge. How serious, they say, is irrefutably gauged by the bitter reality of life for most people there: poverty, illiteracy and a lack of government commitment or ability to solve

social ills.

"Family planning in Costa Rica and Panama is doing relatively better because they have healthier social conditions, but the rest of the countries are in the same situation, more or less. They all lack adequate health and education resources to solve their problems," says Dr Roberto Santiso Gálvez, Executive Director of Aprofam, the IPPF affiliate in Guatemala.

Statistics compiled by the UN, IPPF and the World Bank illustrate some of the problems linked to population growth in Central America. In Honduras, a country with an annual GNP of just \$900 per head, a woman has an average of 5.3 children. An estimated 57 of every 1,000 babies die before they crawl. The population of El Salvador, the region's smallest and most densely populated country, could double to nearly 11 million people within 25 years.

In Guatemala, only 23 per cent of women in stable relationships use contraceptives, and about one in four women need birth control but either cannot get it or are unaware contraceptives exist. Just 27 per cent of all sexually active women use modern contraceptives in Nicaragua, where the population is growing at an alarming rate of 3.4 per cent. In Panama, advances in family planning are being threatened since the number of poor has nearly doubled since 1983. Even Costa Rica, the regional leader in health care and family planning, has suffered from years of government budget cuts prompted by both a sour economy and pressure from the Roman Catholic church.

For every woman who dies of pregnancy-related causes in North America, 134 perish in Central America. Despite the dramatic problems facing many parts of the region, great strides have been made in family planning. Initially, private organizations were allowed to function quietly as political leaders publicly shunned birth control, for fear of angering the

JENNY MATTHEWS/IFPE

STEVEN RUBIN

Left: FPA-run clinic in a poor barrio of Santa Tecla, El Salvador. Inset: Young mother and children, southern Costa Rica. Below: Street urchins, Guatemala.

powerful Roman Catholic church.

By the mid-1960s, though, international pressure to curb population growth and growing demand for birth control prodded officials gradually to draw family planning to the fore. Today, officials in every Central American country generally accept – at least in their rhetoric – that family planning is an important part of development.

The region's demographics are undoubtedly strained, but experts say demographic trends have improved over the years. Costa Rica, which at 3.7 per cent had one of the largest growth rates in the world in 1965, has slashed the rate to 2.9 per cent and has instituted an effective mother and child health care system that includes family planning. A baby born today in Honduras can expect to live almost 22 years longer than an infant born in 1955. An average woman in Panama has just under three children, half the number in 1965.

With the exception of Costa Rica, private associations – and IPPF in particular – have been the main purveyors of programmes designed to reduce unwanted pregnancies and to improve health care for families in Central America. After struggles in the 1960s, governments are now generally supportive of work by IPPF affiliates, the UN and others.

Political leaders say fighting population growth must be an integral part of development strategies, but there are few cases where they have backed up their words with action, according to people working in the field. "All the governments have got over the trauma of family planning. There's a lot less opposition now, but there's a lack of political support. There's not enough government commitment," says Carmen Miro, of the Justo Arosemena Center for Latin American Studies in Panama. Until governments commit themselves to solving the symptoms of population growth – access to basic health care and education, better

water and sewers, good food and jobs – population-related problems will continue to worsen, say Dr Santiso and others.

El Salvador and Nicaragua have been economically devastated by more than a decade of civil war. A 30-year military conflict with insurgents in Guatemala continues to sap resources that could be used for health care, housing and education desperately needed in many areas. The three countries have annual GNPs under \$910 per head. There is hope among family planning associations and government officials that peace processes under way in El Salvador and Nicaragua could produce a shift in spending from war to social programmes, including family planning, but that remains to be seen.

A fundamental obstacle is that family planning programmes compete for government spending on education, health care and other basic services. Family planning usually loses out, Dr Santiso explains. "The situation is very bad. The resources are very small to fight curable diseases like diarrhoea – much less to invest in prevention programmes like family planning," he says.

Family planning associations have been doing good work but have had varying success in reaching everyone who needs family planning services, according to Dr Santiso, who has studied contraceptive use in Central America.

In the future, though, one thing must happen before population growth can be brought under control: talk of population policies must turn into real government commitment, family planning advocates say. Otherwise, associations and government agencies simply will not be able to meet the increasing demands of people who need to plan their families.

Right now, says Carmen Miro, there is a well-tested system for delivering family planning services in every country in the region. The only thing missing, she adds, is the

political will to make it work as well as it could. ■

Cecilia Valdés is a Guatemalan journalist.



■ Earlier this year the Central American Safe Motherhood Conference, which involved the isthmus countries plus Mexico, Cuba and the Dominican Republic, adopted the Guatemala Declaration, which made a number of strong recommendations for reducing maternal mortality and morbidity. This included an important message about the need to prevent unwanted pregnancies through family planning and sex education, as well as advocating that the problem of abortion should be confronted, and that women who suffer complications from abortions should receive proper treatment.

In the family planning section, the conference listed four priorities. The first was to establish or strengthen population and development policies in all countries, based on the links population has with health, family planning, the environment, education, women's status and the protection of girls. The others were to promote the expansion of family planning services, ensuring that a broad range of methods and adequate information and counselling is offered; to develop plans to integrate sex education into formal and informal education; and to seek innovative strategies to involve men in family planning, reproductive health and sex education. ■

STEVEN RUBIN

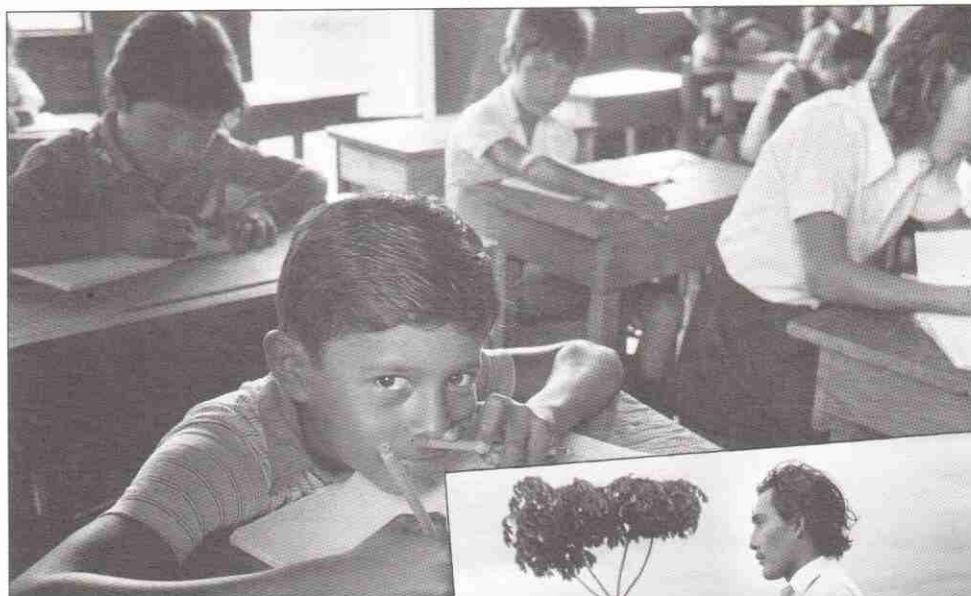
Costa Rica's past progress under threat

Costa Rica's population trends have changed as dramatically as the country's standard of living in the last 30 years. In a region marked by an extreme polarization of wealth, this small country (which has no standing army) has a middle class, and its health care system, social services and infrastructure are the best in Central America. Costa Ricans, or Ticos as they are known, have the highest annual GNP in the region, at \$1,780 per head.

These socio-economic improvements have been linked to major changes in population trends as well, demographers say. The growth rate, once among the world's highest, has slowed in three decades to 2.9 per cent. Women bear an average of 3.3 children, less than half the number they had in 1960. Infant mortality has dropped to 18 deaths per 1,000 live births, down from 81 in 1965.

But since the 1980s Costa Rica has slipped somewhat. Although the country still has the best family planning situation in Central America, economic strife, opposition by the Roman Catholic church and waning government support have whittled away at population programmes.

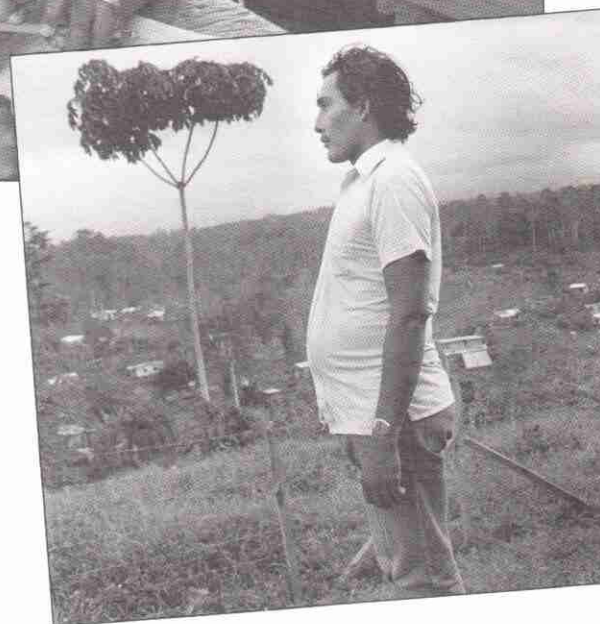
"Costa Rica, in terms of family



STEVEN RUBIN

planning, is really in a paradoxical situation," says Victor Morgan, Executive Director of the Asociación Demográfica Costarricense (ADC), IPPF's affiliate in Costa Rica. Government spending on health care, including family planning programmes, has been cut 20 per cent in the last two years. Eight of 15 family planning projects were cancelled or postponed in 1990. But the problem goes beyond money, Morgan says.

Studies by the ADC show that the people who need family planning services most – the poor and teenagers – do not know where to find them and in many cases are unaware



Reaching the hard-to-reach

Guatemala, a fascinating mix of ethnic groups and breathtaking landscapes, is troubled by one of the most alarming, and confounding, family planning situations in Central America.

Its family planning programmes are among the most innovative in the region, yet just 23 per cent of women use contraceptives. The average woman has 5.3 children in her lifetime, and at the current growth rate Guatemala's population will double to nearly 19 million within 23 years. Those who work in Guatemala say those demographic trends are rooted in poverty and illiteracy, plus the added problem of a large number of indigenous families in rural areas out of reach of basic health systems.

"We have a striking economic and cultural situation here," says Dr Roberto Santiso Gálvez, Executive Director of Aprofam, Guatemala's family planning association affiliated to IPPF. "Family planning goes arm in arm with the health and education of its people. It all adds up in the end."



Abject poverty, and the health problems it spawns, overwhelms efforts by private associations to make family planning a way of life in Guatemala. Eighty per cent of people live in poverty – most of them in extreme poverty. Experts acknowledge the government uses most of its

resources to fight diarrhoea and other killers. Little is left over to invest in a comprehensive population policy. "The Government is supportive, but family planning is simply not a high government priority," Dr Santiso says.

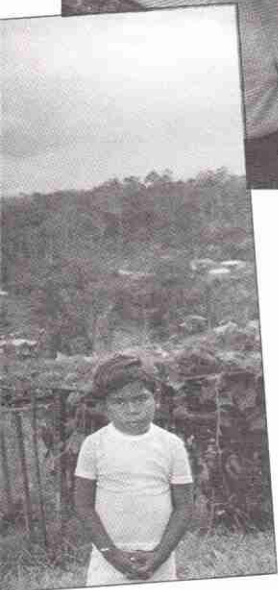
Aprofam's innovative marketing research targets the nation's rural indigenous people who need family planning services but do not have access to them or are unaware of their existence. But the organization can only do so much to get services to them because more than four in 10 indigenous Guatemalans live in isolated mountain communities without roads, much less with access to health care. In some areas of the country, infant mortality is estimated to reach 200 per 1,000 live births. There is also the problem of communication and language. Guatemala is a nation of small, distinct ethnic groups, where four different languages and 23 dialects are spoken. More alarming, four-fifths of Guatemalans who live in the countryside cannot read or write.

But population growth has slowed over the last three decades, and a much higher percentage of sexually active women practise family planning

JENNY MATTHEWS



Left (from top): School, Costa Rica. Nicaraguan refugee father and son. Aprofam-sponsored mothers' club, rural Guatemala. Above: Traditional midwife, Honduras. Below: Rural health worker, Guatemala.



contraceptives even exist. These studies have found that some older women have followed the Catholic church's lead and stopped using birth control. Other women use inappropriate contraceptive methods, especially because of laws limiting sterilization.

In 1972 Costa Rica had the most comprehensive family health care system in Latin America, next to Chile. Coupled with good water and sewer systems, a healthy economy and solid political commitment, the country was able to tackle many population-related problems. "They really have been able to do a lot," says Dr Germán Mora, a family planning

expert with the Pan American Health Organization in Washington.

But in 1978, Rodrigo Carazo, closely allied to the Catholic church, was elected President. Political and economic support for family planning was scaled back and then a serious economic crisis that lasted through the 1980s added to the deterioration.

But the Government now may be changing its attitude. Though far from restoring the budget cuts of the last two years, this year officials agreed to fund a national sex education and family planning programme aimed at reducing teenage pregnancy.

The ADC is also working with several government agencies on a comprehensive health clinic for men and women on the country's Atlantic coast. The government-funded clinic will offer family planning services to residents of the area, many of whom do not have access to contraceptives.

In 1991 the Costa Rican association and community groups began providing family planning services to the poor through a small clinic in Cartago, one of the poorest regions of the country. Four more clinics are planned in the next two years. The ADC also plans to expand volunteer training in small communities in the densely populated Central Valley, to show people how to teach their neighbours about family planning and steer them toward available services.

Cecilia Valdés

than did in 1950. The percentage keeps growing. In 1992, Aprofam plans to provide services to 16,000 more people. Aprofam's innovative approach includes:

- Radio, print and television promotions in several languages. One is a popular soap opera where family planning and mother and child health care is a central theme.
- Market research to find the best strategy to reach indigenous families.
- Training, client surveys and upgrading clinic standards to improve service in existing facilities.
- Preventative primary care programmes, including breast-feeding, training and voluntary sterilization.

Though Guatemala's population-related ills are far from cured, family planning programmes have helped thousands of families. For people like Paulina Lebron, who lives with her family in Solola, one of the poorest areas of Guatemala, the chance to space her children has improved the family's quality of life. Until an Aprofam field worker convinced her that family planning is safe, Lebron had resigned herself to having more babies.



"We weren't sure about it because people said family planning was bad for you," says Lebron. "My in-laws wouldn't let me and my husband was against it. Finally we decided I should have an operation because all my

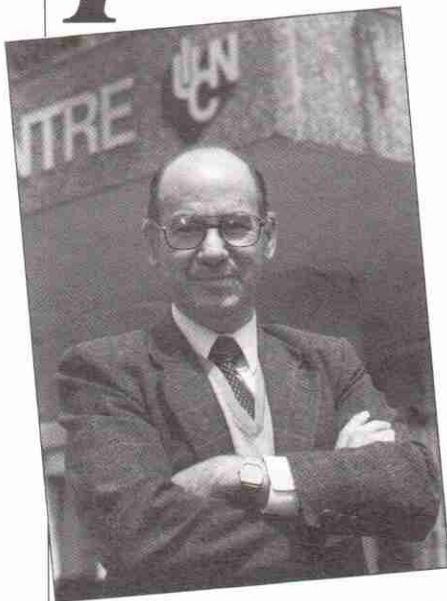
pregnancies had been very hard, and I always suffer a great deal. Now we are like newlyweds," she adds. "And we can sleep together without getting pregnant."

Cecilia Valdés

Tourists for conservation

Parks and protected areas are not only under pressure from growing populations, but from the mass migration of wealthy tourists who wish to explore them. *Héctor Ceballos-Lascuráin*, IUCN Co-ordinator of the World Parks Congress, is now in charge of a new Eco-tourism project, which seeks to turn this tide of tourists into a tool for conservation. He talks here to *People & the Planet*.

P *People & the Planet: Can you define Eco-tourism?*
Héctor Ceballos-Lascuráin:



ALAIN MORVAN/IPPF

Eco-tourism consists of travelling to and visiting natural areas that are relatively undisturbed, with an express objective of seeing, studying, admiring the features of the landscape, flora, fauna, as well as any cultural aspects both of the past and the present that may be found in these areas. Eco-tourism also means involving the local people in the process so that they can have socio-economic benefits from this process. It also implies having strict guidelines set up by the different authorities so that the tourism flux has the least minimum negative impact on the environment.



Why did we have to have a new word for this aspect of tourism?

Because it is a new phenomenon and several things contributed to this new phenomenon. First of all there is jet travel. This is relatively new. Next, in the richer countries, people are having more money, more leisure time, and more people are retired and have the possibility of travelling. Also, we are in the TV age and television shows exotic

places, and that entices people to go and visit them. And many people in developing countries are becoming interested in their natural and cultural heritage and are visiting their national parks in greater numbers.

Can you give some idea of the scale of eco-tourism and the speed of which it is growing?

According to studies of the World Tourism Organization and George

Bogged down: tourists in trouble in the Masai-Mara Reserve, Kenya.



Washington University, adventure travel which includes eco-tourism and other things like water rafting, is the fastest growing segment of tourism in the world. It is really growing on an exponential scale. It is not replacing mass tourism, but it is growing much faster.

It's very difficult to put figures on this, but the Canadian Wildlife Service has made a first rough estimate and according to this draft study, it

is possible that as many as 235 million travellers who went abroad in 1990 engaged in some kind of eco-tourism. They may have been to a business meeting, for example, and spent the weekend in a National Park. These people spent on the average about \$1,000, or well over \$200 billion in total, on eco-tourism activities.

This, of course, is in addition to eco-tourism travel within countries,

which in some cases can be as much as ten times the international influx.

So you are really talking about a mass migration?

Yes, and this is very worrisome. And that is why IUCN has asked me to conduct a world eco-tourism programme to try to find out what is going on, and define guidelines that can be of use to different countries and different areas. There are no magic recipes. Each national park, protected area, should have a management plan,

What are the benefits and what are the dangers?

The benefits are very clear. In many of the protected areas around the world and especially in Third World countries people have a very low living standard. There is poverty in the rural areas. So these people can really be actively involved in the eco-tourism process. This would mean improving their livelihood, getting additional income. And it can mean combining other activities like agriculture and farming with eco-tourism activities. It would bring money to national park managements which are always operating on very low budgets. It could become a self-financing mechanism if we can devise ways of having part of the money coming in from tourists stay in the protected areas.

It's also a fantastic education tool. The best way to know about nature is to go to a natural area.

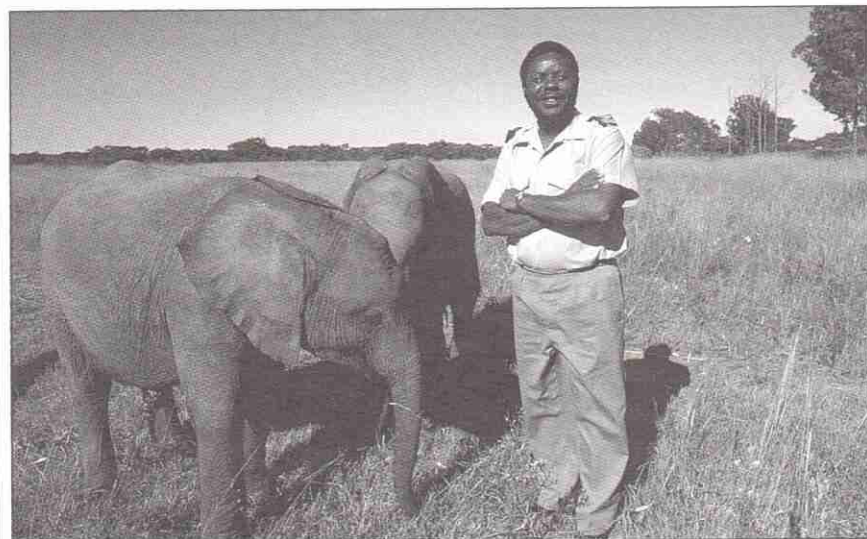
It's also very important to raise national pride. Sometimes Third World countries lose their sense of pride and this may be a way of telling them that they have things that the rich, developed countries don't have – tropical eco-systems, fantastic birds, wonderful fauna, that the rich Japanese, the rich European or rich Americans don't have.

What about the down side?

If we are not prepared for these numbers of people coming to the protected areas, then the damage

PENNY TWEEDE/PANOS PICTURES

Zimbabwe Director of National Parks, Dr Nduku, with baby elephants. Eco-tourism can be an important source of income.



DAVID REED/PANOS PICTURES

can be tremendous. It can be irreversible in many cases. That's why it is urgent for all the countries to have a national eco-tourism plan.

Do you see cultural dangers as well?

Yes. Eco-tourism, as I have defined it, relates to the whole natural and cultural environment, and since many of these natural areas are in very isolated places this means involving local people who have not had previous contact with other forms of civilization. So we need anthropologists to participate in these eco-tourism plans so that they can tell us how the interrelationship between local people and tourists can be best handled to avoid conflicts.

Fortunately, I know from my own experience, especially in Mexico and Central America, that many eco-tourists are culturally sensitive and are very respectful.

Briefly, how do you see the solutions?

We have come out of this Congress with very strong recommendations on eco-tourism: that there should be guidelines at the national, state and local levels and that there should be associations of entrepreneurs which would work as a team with authorities and arrive at a seal of approval system. If these ideas are followed through then the qual-

ity control is going to be exerted by the eco-tourism agencies themselves.

There's a natural conflict isn't there, between the aims of the entrepreneur to maximize revenues and the fragility of the environment?

I agree with you. Some entrepreneurs always want to earn money above everything else. That is one reason why it is so important to involve the local people, so that everyone is aware that the wrong sort of tourism can ruin the golden egg.

The idea is to make a very good management plan for all these protected areas, to try to pinpoint the different areas where you can have physical facilities for tourists, to have the people distributed a little more evenly over the protected areas. Many of the protected areas are paper parks, they don't have physical facilities or they don't have adequate physical facilities.

It means low impact architecture, it implies using eco-techniques such as solar energy, capturing and recycling rainwater, recycling refuse in an adequate way, having a certain level of self-sufficiency, good food through aqua-culture or small ecological farms in the buffer zones of these protected areas.

I am from Mexico, and for me it's

very unfortunate that in some parts of the Yucatán Peninsula I come to a place in the forest, ask for a refreshment, and instead of bringing me a natural orange drink they bring me some can that was produced in Miami, Florida. So let's try to have a self-sufficient food production.

Would you like to see a levy on tourists to contribute to the protection of these areas?

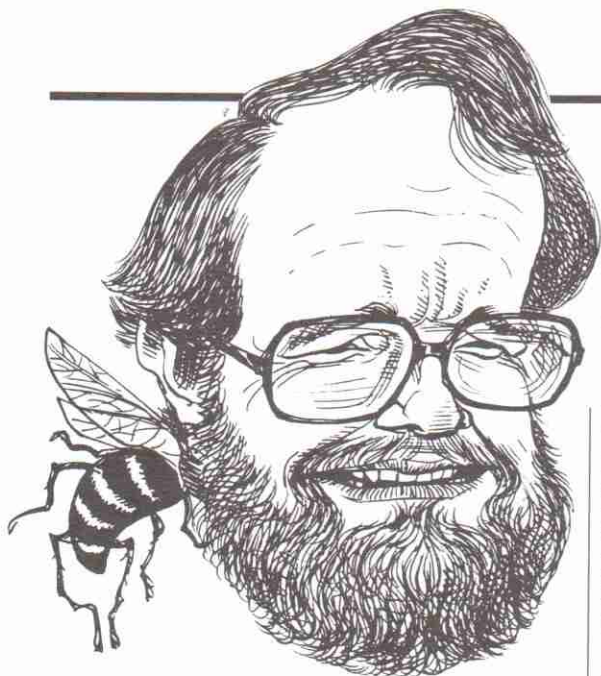
It is, again, very difficult to generalize. You have to study each situation. For example, in rich countries like Australia and New Zealand eco-tourism is becoming a very important source of income. There is a plenty of scope to encourage contributions from the luxurious eco-tourism lodges being set up in Australia, to be put towards the protection of the parks.

Do you anticipate the day will come when there will have to be some sort of rationing, some sort of limitation on the numbers?

Absolutely. And we already see this in the Altamira caves in Spain, which is a kind of eco-tourism. If you want to go to Altamira, you have to sign up one year in advance. Also, it is important that eco-tourism should not be restricted to protected areas, so as to avoid excessive stress on them.

Do you also see this in some ways as a population issue? If we are thinking of a world of 15 billion rather than a world of say 8 billion, is that going to be a matter which we should be concerned about?

It definitely has links with our demographic problem. There are more people in this world and the protected areas are not growing that fast and that means there is going to be plus value on these areas. So far these areas have been seen as kind of a nobody's land or surplus land and the pressure on them is steadily mounting. So the quicker we can stabilize population the better. ■



Gadfly: Norman Myers

A population policy for the North?

We hear much about the premium on population policies for developing nations. But shouldn't developed nations also consider the need for specific population policies? Shouldn't they decide how many, or how few, people they want, and then devise measures to achieve their target by a particular date?

The prospect is rarely considered. Worse, it is hardly ever perceived as a worthwhile option at all. Not a single developed nation has indicated it wishes to reduce its population growth rate, let alone to bring it down to zero by some specific time. More to the point still, not one has determined what is its carrying capacity in terms of for example its own food-producing lands plus overseas sources of food. Britain depends upon a foreign "shadow ecology" twice the size of its own territory.

Ironically, the only policy initiatives on the population front are directed at increasing the growth rate in a few nations. Germany, France, Italy and a handful of others want to step up their fertility. They do this on the grounds that they fear the "greying" of their populations, meaning that as their populaces grow older (due to increased longevity) there will be an unprecedentedly large proportion of people in the retired-from-work and hence unproductive categories. Certainly this is a problem. But there are better ways to meet the problem than by producing more producers: there could be emphasis on quality rather than quantity of

the workforce; and as people live longer and healthier lives, the retirement age could be deferred. In any case, the longer the problem is deferred, the more of a problem it will become. Measures to increase fertility merely postpone the ever-tougher day of reckoning.

Moreover, the consumerist patterns of developed nations induce much environmental degradation, especially as concerns two of the biggest environmental threats of all, ozone-layer depletion and global warming. Because these threats reflect in part the continuing population growth of developed nations, the question deserves to be addressed with all due despatch.

We should consider the entire impact of population growth on the planetary ecosystem that ultimately sustains all mankind. Britain with almost 58 million people today and a population growth rate of 0.2 per cent per year, produces an extra 116,000 people per year through natural increase alone (not counting immigration). Bangladesh with 120 million people and a population growth rate of 2.4 per cent per year, produces an extra 2.9 million people per year, or 25 times as many as Britain. But an average British person consumes energy equivalent to 35 barrels of oil per year (almost all of it in the form of fossil fuels), an average Bangladeshi just 3.

Similar considerations apply, only more so, to the United States with its consumption of key resources, its waste generation and pollution, and its contribution to global warming. The United States' affluence and technology means that each of its 250 million people exerts an environmental impact twice that of a counterpart in Britain or Australia, 50 times that of a citizen of India or China, and almost 300 times that of a person in Uganda or Laos. So what is the comparative significance of the United States' population growth rate, 0.8 per cent, and that of India, 2.0 per cent? To feed each American takes at least 1,500 kgs of

agricultural products, an Indian around 500 kgs – with all that implies for pressures on agricultural lands. An American consumes 8,000 litres of fossil fuel (oil equivalent), an Indian just over 400 litres, or only 5 per cent as much – with all that implies, via the greenhouse effect, for climate systems right around the Earth. Can the world afford the United States?

We can raise similar questions about Germany, Japan, and all other developed nations. Of course the environmental impact of their lifestyles is a function of their consumerism and technologies too, and there is much scope to alleviate the impact through corrective action in these spheres as well as in the population field. But the population component remains an integral part of the situation, hence it is significant – and it may be the variable that is most open to broad-scope change in the long run.

This population question has not been addressed to date. Indeed it is hardly ever raised. But an implicit answer is being continuously supplied by developed-world people's use – often mis-use and over-use – of their environmental resource base, increasingly with spillover consequences for all other nations. The problem is being resolved by default rather than by design. Since it is built into developed-world people's lifestyles, should these nations not move from implicit action (or inaction) to explicit response as concerns their population growth?

In point of fact, the population growth problem could be resolved in Britain's case through a simple expedient: eliminate all unwanted births. The population would then actually decline from the present 58 million to about 45 million by the middle of next century. The same consideration applies to many if not most other developed nations. ■

Norman Myers is a Worldwide Fund for Nature gold medallist, author and consultant on environmental issues.

RICHARD WILLSON

BOOKS

Over the cliff edge

Beyond the Limits: Global Collapse or a Sustainable Future

Donella and Dennis Meadows and Jørgen Randers

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Beyond the Limits is a 20th anniversary update of the Club of Rome report *The Limits to Growth*. The title announces the conclusions. In 1972 the authors thought we were two or three decades away from the physical limits. Today they believe that for many resource and pollution flows we have already passed them.

The new study is based on the concept of overshoot – passing limits without meaning to do so. Overshoot happens when a system grows beyond the level that limited resources and waste sinks can sustain.

Overshoot is almost inevitable when a system is locked into growth, but knowledge about the limits is poor, and there are delays that hold up a quick response. This corresponds to the present world situation. Population is growing, in numerical terms, faster than ever before. Only a tiny minority have any real commitment to slowing or halting economic growth.

Our knowledge about limits, particularly of waste sinks, is poor, and we don't discover most limits till we've already passed them. The ensuing problems alert us and drive us into action. Even then delays are endemic: we don't yet have the economic or political systems capable of translating widespread concern into speedy action.

So global overshoot by the human species is more or less inevitable.

Not everyone – including myself – will agree that we are bound to overshoot in respect of land and non-renewable resources. Here the feedback mechanisms – mainly market signals – do work most of the time.

The report has many charts showing non-renewable resources heading inexorably downwards. Most readers, I think, will assume that they refer to real resources. In fact, the text makes clear, but not clear enough, that the computer model covers only one imaginary non-renewable Resource, which is assumed to be limited and has 220 years left at current use rates. As this is used up, It

gets more and more expensive and then runs out.

No allowance is made for substitution, nor for shifts to virtually inexhaustible resources such as ceramics or solar energy. The other key assumption is that land will be degraded beyond all chance of restoration if production is pushed too high. In fact when farmers face erosion problems and have an economic technology to control them, they generally use it.

But overshoot is almost certain in the case of pollution. We are already beyond the limits for CFCs, which we must phase out altogether, and probably for greenhouse gases, where we

where people had become overdependent on a single vulnerable crop. In recent times there are no examples outside wartime of population collapse on a large scale – not even in the Sahel, where repeated famines cause barely a blip in the population growth rates. The reason is that when our backs are up against the wall, we adapt swiftly. When times are really bad, people have fewer children.

In the scenarios, the collapses are hard to avoid even with ambitious measures. They happen even where resources are assumed to be doubled, where pollution and erosion are controlled, farming achieves high yields, and resource-efficient technologies are used. The only scenarios which avoid collapse involve early transitions to replacement fertility. The best combines pollution and erosion controls and higher efficiency in resource use, with a two child family norm adopted worldwide in 1995. With all these measures taken together the world could make a smooth transition to a population of almost 8 billion, with industrial production 50 per cent above today's.

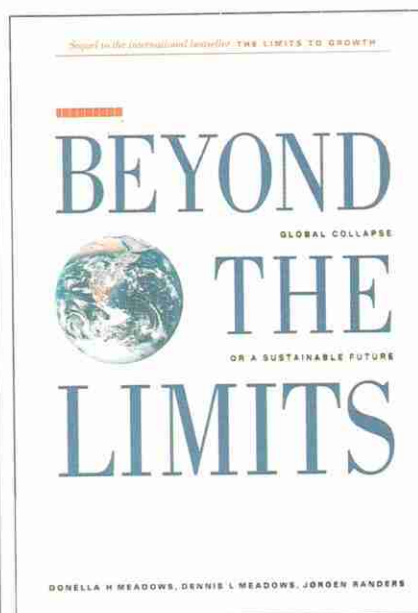
Now there is no chance whatsoever of replacement fertility being reached in 1995. If the two child norm did not come in until 2015, we would pull through eventually, but not without a temporary and fairly serious population collapse around 2050 AD. Since 2015 is probably the earliest feasible date for replacement fertility to be reached even with a huge co-ordinated effort, we're in for trouble if this book is right.

And we're in for even bigger trouble if we follow the UN's medium projection, which assumes replacement fertility will not be reached till 2030 or later. If the book is right, we would then face a population decline of two billion or more in the second half of the next century.

Beyond the Limits ends on an optimistic note, urging that we can pull through with longer planning horizons, truth telling, faster learning, and above all less egotism and more loving. But the computer analysis, set alongside real facts and probabilities, makes the optimism look misplaced. Only if the analysis is wrong, are there realistic grounds to hope that we can avoid an apocalypse.

Paul Harrison

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must cut output by 60 per cent to avoid some degree of warming. But here too, the scenarios do not refer to real pollutants, but to one generic Pollutant that works by reducing life expectancy and crop yields.

The crunch is: what happens after overshoot? It can be followed by a series of ups and downs gradually moving to a balance – or by catastrophic collapse. The emphasis throughout most of the 'warning' part of the book is on the 'overshoot and collapse' mode. Nine out of the thirteen scenarios involved overshoot followed by permanent collapse – of production, consumption, life expectancy and population.

Yet collapse of human populations is rarely found in modern times. One example is the Irish potato famine,